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General Article

PARASITIC GASTRO-ENTERITIS IN SHEEP*

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About one dozen species of parasitic worms are commonly found in large numbers in the alimentary tract of sheep, where they cause disease associated chiefly with gastritis and enteritis. Parasitic gastro-enteritis is widespread in areas where sheep are reared and fed. Young sheep are most liable to attack, but older animals are not altogether safe, and each autumn and winter thousands of sheep fall victims of the disease, which does not respond well to simple curative treatment. For some years a satisfactory treatment has existed for outbreaks in which the twisted wireworms (*Hæmonchus*) and tapeworms (*Moniezia*) predominate, but efforts directed to discovering a drug with a specific lethal action against the other common parasites of the abomasum and intestines have not met with the same success. Theoretically it does not matter whether the parasite's life cycle is interrupted inside the host or during its free-living period, but practical considerations make it evident that the ultimate control of the disease awaits the discovery of specific remedial treatment.

The critical test for an anthelmintic is its ability to kill parasites *in vivo*, and this can be ascertained by *post-mortem* examinations on treated sheep, provided care is taken beforehand to identify the parasites present. Methods involving the death of test animals are unpopular on the score of expense, and several workers have endeavoured to evaluate the efficacy of drug treatment by undertaking regular egg-counts on the fæces. This method has obvious limitations which are well-known to parasitologists, and recently Taylor[1] has pointed out several, and shown that an egg-count is not a reliable guide to the numbers of worms harboured by a sheep. Consequently egg-counts cannot be used as the sole criterion of the effectiveness of treatment. Previous work does not seem to have included systematic hæmatology, although parasitic infestations frequently bring about marked changes in the blood, as for example, eosinophilia. Fraser[2] studied normal sheep's blood and also that of sheep suffering from gastro-intestinal parasites, and was able to show that the blood picture varied according to the course of the clinical disease. Slight infections do not cause significant changes, but well-marked infections cause, in addition to anæmia, a lymphocytosis and a decrease in neutrophile leucocytes. A very acute infestation causes rapid destruction of red cells, an increase in neutrophiles and a decreased number of lymphocytes and eosinophiles. Fourie[3] fed the larvæ of *H. contortus* to 38 healthy sheep and succeeded in producing a fatal anæmia in nine cases. This work was controlled by blood examinations and his results show that a neutrophile leucocytosis occurred towards the end of the disease.

In January, 1934, the writers encountered an outbreak of parasitic gastro-enteritis in a flock of cross-bred yearling sheep (hoggs), which were purchased as healthy lambs the previous September. The disease showed itself in November by unthriftiness which gradually increased, until at the end of January 40 hoggs had died out of 400, and in addition over 100 hoggs were visibly and severely affected. Egg-counts carried out on the fæces of three emaciated sheep disclosed counts ranging from 28,000 to 53,000 eggs per gram, and *post-mortem* examination revealed a heavy infestation of gastro-intestinal parasites of which the following species predominated: *O. circumcincta, T. extenuatus, C. oncophora, C. ovina,* and *M. expansa.* Permission was given to conduct an experiment designed to test the value of certain drugs in effecting a cure. On account of the somewhat favourable results that one of us (W. L. S.) has obtained by systematic use of a 1 per cent. solution of copper sulphate in preventing the ravages of parasitic gastro-enteritis in lambs (unpublished data) in uncontrolled experiments, it seemed desirable to submit copper sulphate to a more critical test. A controlled experiment was therefore planned, in which it was decided to leave an untreated group and to undertake blood examinations and fæcal egg-counts on the test animals.

The Experiment

One hundred hoggs were affected and these were divided as uniformly as possible into four groups of 25 hoggs each.

GROUP I.—Ten hoggs in this group were ear-tagged with numbered discs. Blood and fæces samples were obtained and analysed before treatment commenced. The 25 hoggs in Group I were given 4 fluid ounces of 1 per cent. copper sulphate solution repeated at weekly intervals for six

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weeks, and thereafter every two weeks until eight doses had been given. Blood and fæces samples were collected in January, February, March and May. The blood examination included estimation of hæmoglobin, enumeration of red and white blood cells, estimation of red precipitate, and differential leucocytic counts.

Group II.—Five hoggs in this group were ear-tagged and initial blood and fæcal samples taken. The hoggs in Group II were given 16 grains of anhydrous copper sulphate, which was thrown on the back of the tongue. This was repeated weekly for six weeks and then fortnightly for four weeks. Blood examination was limited to hæmoglobin estimations, and egg-counts were made as in Group I.

Group III.—Five hoggs were ear-tagged and initial blood and fæces samples taken. This group was given capsules containing 2 c.cs. tetrachlorethylene once per week for six weeks, and then fortnightly for four weeks. Hæmoglobin estimations were carried out on blood samples and the fæces were examined as above.

Group IV.—Five hoggs were ear-tagged and initial blood and fæces samples taken. This group received no treatment throughout the experiment. Hæmoglobin was estimated at the usual intervals and egg-counts were made.

The four groups were placed in adjacent fields and all the animals received a ration of concentrated food consisting of crushed oats, bran, maize, and cotton cake. Hæmoglobin was estimated colorimetrically, using a Newcomer disc, and the results were expressed on a sheep scale constructed by Piercy.[4] On this scale the estimated average hæmoglobin content of normal sheep blood, *viz.*, 11·45 grams per cent., is represented by the figure 100, so that deviations from normality can be seen easily. Red precipitate or volume per cent. of red cells was estimated by spinning oxalated blood to constant volume in the centrifuge. The figure obtained for normal sheep blood is approximately 40 per cent. The colour index was calculated by dividing the number of red blood cells expressed in millions per cub. mm. into hæmoglobin expressed in grams per cent. In health the colour index is unity. Egg-counts were made according to

TABLE I

Hæmoglobin Values and Fæcal Egg-counts.
11·45 grams Hb. per cent. = 100. Eggs per gram fæces.

Groups.	Sheep.	January.		February.		March.		May.	
		Hb.	Egg Index.	Hb.	Egg Index.	Hb.	Egg Index.	Hb.	Egg Index.
No. 1.	1	79	1,200	64	200	85	400	84	400
	2	79	1,200	85	800	103	3,100	—	—
4 fluid ozs. 1 per cent. copper sulphate weekly.	3	55	5,100	52	9,200	63	13,700	59	600
	4	84	500	83	400	89	400	97	400
	5	73	1,400	70	1,000	74	2,400	70	0
Six weekly doses given, then two doses fortnightly.	6	74	5,100	79	11,200	81	4,800	78	500
	7	72	—	72	1,500	85	600	85	0
	8	86	1,100	91	1,600	93	600	87	200
	9	54	7,200	77	9,000	100	died	—	—
	10	79	1,300	76	1,500	91	1,000	89	600
Average	...	74	2,680	75	3,600	86	3,000	81	338
No. 2.	11	103	6,100	76	2,600	95	700	91	0
	12	69	4,600	70	4,400	87	2,000	93	200
16 gr. powdered bluestone weekly.	13	80	3,200	78	6,000	died	—	—	—
	14	74	1,000	77	0	74	400	81	200
Doses as above.	15	93	—	100	1,000	104	700	86	0
Average	...	84	3,700	80	2,800	90	950	88	100
No. 3.	16	104	7,000	73	1,400	89	2,700	81	400
	17	54	12,000	died	41,800	died	—	—	—
2 c.cs. Tetrachlorethylene weekly.	18	60	2,600	86	100	died	—	—	—
	19	83	1,200	55	1,400	93	800	77	200
Doses as above.	20	89	7,000	86	800	died	—	—	—
Average	...	78	6,000	75	9,000	—	—	—	—
No. 4.	21	77	3,900	72	5,800	65	2,100	68	1,000
	22	69	1,200	72	0	65	600	63	0
No treatment.	23	97	1,600	70	1,500	79	1,300	85	400
	24	72	1,800	68	800	63	5,400	56	1,700
	25	86	2,300	68	3,800	75	1,200	74	0
Average	...	80	2,100	70	2,380	69	2,100	69	600

TABLE II

BLOOD PICTURES FOR GROUP I AND EGG-COUNTS IN EGGS PER GRAM FAECES

$$\text{Colour Index} = \frac{\text{Hb. gm. p.c.}}{\text{R.B.Cs., mils per c.mm.}}$$

	Egg Index.	Red PPT. Vol. p.c.	R.B.Cs. MILS. per c.mm.	Hb. scale 11·45 gm. p.c. = 100.	Colour Index.	W.B.Cs. per c.mm.	Neutrophiles. p.c.	Lymphocytes. p.c.	Monocytes. p.c.	Eosinophiles. p.c.	Basophiles. p.c.	
Sheep 1.												
Jan. 29	1,200	30	9·82	79	0·92	10,400	18	79	1	2	0	Odd Basophile
Feb. 12	200	27	8·49	64	0·92	12,000	47	46	2	5	0	
Mar. 12	400	30	9·25	85	1·06	13,600	47	50	2	1	0	
May 5	400	33	11·42	84	0·84	16,600	45	51	2	2	0	
Sheep 2.												
Jan. 29	1,200	31	11·04	79	0·82	17,000	28	68	1	3	0	
Feb. 12	800	32	9·73	85	1·00	13,000	44	53	1	2	0	
Mar. 12	3,100	31	11·26	103	1·05	10,800	37	58	½	3	1½	
May 5	—	—	—	—	—	—	38	54	1	7	0	Blood clotted Odd Basophile
Sheep 3.												
Jan. 29	5,100	27	6·94	55	0·91	7,800	39	59	½	1½	0	
Feb. 12	9,200	21	5·34	52	1·12	9,000	42	55	2	1	0	Odd Basophile
Mar. 12	13,700	21	6·18	63	1·16	9,400	51	47	1	1	0	
May 5	600	38	6·95	69	0·98	10,600	50	49	1	0	0	
Sheep 4.												
Jan. 29	500	32	10·29	84	0·93	11,800	26	65	0	9	0	Odd Monocyte
Feb. 12	400	30	10·06	83	0·94	8,600	44½	50	1	3	1½	
Mar. 12	400	31	9·68	89	1·05	7,200	53	43	1	3	0	Odd Basophile
May 5	400	27	12·00	97	0·93	11,000	49	45	2	4	0	Odd Basophile
Sheep 5.												
Jan. 29	1,400	28	8·14	73	1·03	15,600	38	60	1	1	0	Odd Basophile
Feb. 12	1,000	29	7·86	70	1·01	13,400	51	45	1	2	1	
Mar. 12	2,400	28	8·18	74	1·04	12,000	48	48	1	3	0	
May 5	0	31	7·61	70	1·05	15,400	46	50	2	2	0	
Sheep 6.												
Jan. 29	5,100	26	9·21	74	0·93	10,400	26	67	2	5	0	
Feb. 12	11,200	30	10·14	79	0·90	11,600	62	36	2	0	0	
Mar. 12	4,800	28	10·19	81	0·91	7,400	53	44	1	2	0	
May 5	500	31	10·78	79	0·82	8,600	49	48	2	1	0	
Sheep 7.												
Jan. 29	—	28	9·13	72	0·90	11,200	40	58	0	2	0	
Feb. 12	1,500	29	9·21	72	0·90	14,200	49	48	1	2	0	
Mar 12	600	32	8·95	85	1·10	11,000	45	50	1	4	0	
May 5	0	38	11·06	85	0·89	5,600	39	49	3	9	0	
Sheep 8.												
Jan. 29	1,100	33	10·63	86	0·93	12,600	37	58	1	4	0	Odd Monocyte
Feb. 12	1,600	36	11·19	91	0·93	8,800	30	67	1	2	0	Odd Basophile
Mar. 12	600	32	11·52	93	0·92	16,400	60	38	1	1	0	Odd Basophile
May 5	200	38	12·15	87	0·82	13,200	52	44	2	2	0	Odd Basophile
Sheep 9.												
Jan. 29	7,200	18	5·37	54	1·07	11,000	23	73	1½	2½	0	
Feb. 12	9,000	31	8·67	77	1·04	10,800	57	40	1	1	1	
Mar. 12	—	36	9·44	100	1·22	5,400	56	42	1	1	0	Died 12/3/34
May 5	—	—	—	—	—	—	—	—	—	—	—	
Sheep 10.												
Jan. 29	1,300	32	11·01	79	0·83	15,200	24	69	1	6	0	
Feb. 12	1,500	29	8·81	76	1·00	18,000	57	37	1	5	0	
Mar. 12	1,000	32	9·61	91	1·08	13,600	52	46	1	1	0	
May 5	600	36	12·12	89	0·84	12,000	44	52	2	2	0	
Averages Group 1.												
Jan. 29	2,680	28	9·16	74	0·93	12,300	30	66	1	3	0	Odd Basophile
Feb. 12	3,600	29	8·45	75	0·98	11,940	48	48	1	3	0	Odd Basophile
Mar. 12	3,000	33	8·83	86	1·06	10,480	49	47	1	3	0	Odd Basophile
May 5	338	34	10·51	81	0·92	10,300	46	49	2	3	0	Odd Basophile

Stoll's technique,[5] which expresses the numbers of parasitic eggs per gram of fæces. In Table I the results of the initial examinations of blood and fæces are recorded. Treatments commenced on January 30th.

RESULTS

Group I.—Reference to Table I shows that the hoggs were suffering from anæmia, and that the sheep with low hæmoglobin values gave high fæcal egg-counts. In eight of the sheep the colour index (Table II) is low, as also are the red precipitate figures. Fraser[2] has studied the blood of normal sheep, and sheep suffering from various pathological conditions. His figures for the white blood corpuscles of normal sheep are as follows: Total, $8{,}000 \pm 1{,}900$ per c.mm., containing $39{\cdot}1 \pm 7{\cdot}7$ per cent. neutrophiles, $52 \pm 7{\cdot}9$ per cent. lymphocytes, $3{\cdot}2 \pm 1$ per cent. monocytes, $4{\cdot}9 \pm 6{\cdot}1$ per cent. eosinophiles and $0{\cdot}7 \pm 0{\cdot}9$ per cent. basophile leucocytes. Sheep suffering from well-marked infections with gastro-intestinal parasites show a lymphocytosis with a decrease in the percentage of neutrophile leucocytes. The average figures for the ten parasitised sheep in Group I are similar to those recorded by Fraser[2] since they show a distinct rise in lymphocytes at the expense of the neutrophiles, *viz.*, 66 per cent. lymphocytes, and 30 per cent. neutrophiles.

The second series of samples was taken after the sheep had received two doses of bluestone solution, and there was no visible improvement in their clinical appearance. Some fluctuation occurred in the egg-counts, but the hæmoglobin figures showed no change. The most significant change was seen in the differential leucocytic counts. In nine of the ten sheep examined there was a sharp rise in neutrophiles and a corresponding fall in lymphocytes. This sudden reversal of the neutrophile/lymphocyte ratio is of considerable interest, as it was the first and indeed the only indication on February 12th of commencing resolution on the part of the affected sheep.

Blood and fæces were again examined in March when the sheep had received six weekly doses of bluestone. The figures show a fall in total number of white cells, but no change in the differential counts. In general, the figures supply distinct evidence of a remission of the anæmia—hæmoglobin, colour index, and red precipitate figures all showing improvement, which was well borne out by the clinical condition of all the hoggs in this group. A final examination was made two months later (May) when the sheep had to all intents and purposes recovered, except No. 9 which died in March somewhat unexpectedly. For the first time there was a general and significant fall in the egg-counts. Another point of interest emerges from this examination. The hæmoglobin figures in May tended to lag behind the formation of red blood cells, and constituted a possible indication for iron therapy, which exerts a well-known beneficial effect in the treatment of secondary anæmias.

Group II.—The gradual improvement noted for Group I also occurred in this group. At the second examination the average figure for hæmoglobin had fallen slightly (Table I). It rose subsequently and in May the egg-counts had also fallen, two hoggs being found negative. In February Sheep No. 13 was affected with acute diarrhœa and died soon after this examination . The powdered bluestone did not prove easy to administer, as the slightest puff of wind interfered with dosing. This is a difficulty capable of being overcome by the use of the hydrated salt administered on a specially made spoon.

Group III.—Three of the five ear-tagged sheep in this group died before the conclusion of the experiment, so that the data are incomplete. Two of the hoggs developed acute diarrhœa preceding death from cachexia and exhaustion. In the other case the animal sustained a broken stifle and was permanently grounded. The general impression from the clinical appearance of the 22 hoggs in this group was that tetrachlorethylene did not cause so quick or marked a response as did copper sulphate.

Group IV.—Following the marked change in the neutrophile/lymphocyte ratio observed in February among the sheep of Group I, it was decided to undertake differential counts on the untreated control sheep. Five hoggs were examined in March and the results are given in Table III. It will be noted that the figures correspond closely to those of Group I prior to the commencement of treatment, but by May the neutrophile/lymphocyte ratio has returned to normal. The clinical condition of the untreated sheep in this group gradually improved, but the improvement was distinctly less than that of the other groups. The final hæmoglobin figures show no improvement over those of March, and the average has fallen 11 per cent. from the average initial figure in January.

DISCUSSION

The untreated control sheep illustrate the fact that parasitised hoggs which survive until January frequently make a protracted recovery, especially if the winter is favourable. That recovery can be greatly expedited is clearly illustrated by Group I, which contained the worst affected sheep, which nevertheless showed the greatest improvement. Differential leucocyte counts on this group confirm Fraser's finding that sheep severely parasitised with gastro-intestinal parasites show an altered neutrophile/lymphocyte ratio, *i.e.*, low neutrophiles and increased lymphocytes. A return to normal proportions was the first indication of returning

TABLE III

Differential Counts for Untreated Control Group IV

	Neutrophiles per cent.	Lymphocytes per cent.	Monocytes per cent.	Eosinophiles per cent.	Basophiles per cent.	Remarks.
Sheep 21.						
Mar. 12 ...	44	49	1	5	1	
May 5 ...	58	40	1	1	0	
Sheep 22.						
Mar. 12 ...	22	70	2	6	0	
May 5 ...	34	62	2	2	0	
Sheep 23.						
Mar. 12 ...	31	60	1	8	0	
May 5 ...	36	52	3	9	0	Odd Basophile
Sheep 24.						
Mar. 12 ...	24	71	1	4	0	
May 5 ...	35	63	1	1	0	
Sheep 25.						
Mar. 12 ...	36	58	1	3	0	
May 5 ...	38	57	2	3	0	Odd Basophile
Averages. Group IV.						
Mar. 12 ...	31	62	1	6	0	
May 5 ...	40	55	2	3	0	

health, but whether this was due to the direct action of copper sulphate on the blood, or followed a reduction in the worm burden, is somewhat doubtful, and is a point which is not clearly indicated by the egg-counts. Powdered bluestone appeared to be about as efficient as liquid bluestone, and since it can be administered more quickly and without risk of choking, its use might profitably be extended. This method of administration has been widely and successfully used in South Africa, but does not seem to have become popular in Britain.

Summary and Conclusions

(1) One hundred hoggs suffering from parasitic gastro-enteritis were divided into four groups of 25. Three groups were dosed respectively with 1 per cent. solution of copper sulphate, 16 grains anhydrous copper sulphate, and 2 c.cs. tetrachlorethylene. Treatment was repeated at weekly intervals for six weeks, and then fortnightly for four weeks. One group received no treatment.

(2) Clinical observations and fæcal egg-counts during the experimental period were combined with blood analysis. Hæmoglobin was estimated in representative sheep, and in addition, complete blood pictures were established for ten affected sheep under treatment, and later for five untreated control sheep.

(3) Sheep suffering from a well-marked infestation of gastro-intestinal parasites show an increase in the numbers and proportion of lymphocytes and a decrease in the numbers and proportion of neutrophile leucocytes.

(4) Six weeks after the commencement of treatment the blood picture had returned to normal, whereas that of the untreated sheep was still typical of parasitic gastro-enteritis. Differential leucocytic counts provided the first indication of resolution on the part of the affected sheep.

(5) From the data obtained it cannot be said that copper sulphate exerts a marked specific lethal action on the common gastro-intestinal parasites of sheep. That it does favourably influence recovery from the disease is undoubted. The liquid and powder forms would seem to be about equal in efficacy, and this drug appears to be more effective than tetrachlorethylene.

The above investigation was carried out under the Alan, Duke of Northumberland, Memorial Bequest.

References

[1]Taylor, E. L. *Vet. Record,* 1934, Vol. xiv, No. 18, p. 474.

[2]Fraser, A. C. First Rep. Director, Institute of Animal Pathology, Cambridge, 1929-30, p. 114.

[3]Fourie, P. J. J. Seventeenth Rep. Director Vet. Services, Onderstepoort, Union of South Africa, 1931. Part II, p. 495.

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[5]Stoll, N. R. *Parasitology,* 1930, Vol. 22, p. 116.

At the sales of livestock now being held in Buenos Aires 55 Shorthorn bulls recently imported from Great Britain fetched £29,000, and four of them averaged £1,700 a head.

Clinical Communications

AN OUTBREAK OF LEPTOSPIRAL JAUNDICE IN SILVER-FOX CUBS

Some Post-mortem Observations

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Several dead cubs from two ranches of a silver-fox farm were sent to the above department for *post-mortem* examination. One cub, apparently dying, was also received.

On the different ranches the symptoms, as stated by the ranch manager, varied in details thus: On Ranch A the cubs suffered from a discharge from the eyes—at first watery, but later purulent in character; persistent diarrhœa, progressive emaciation, followed by coma and death after an illness lasting from two to three days. On *post-mortem* examination jaundice was occasionally observed. On Ranch B the duration of the illness was much shorter, some cubs being found dead in the morning without having shown any symptoms, while in others diarrhœa alone was observed.

The living cub from Ranch C was said to have been ill for about two days. Upon examination I found the following symptoms:—

(1) The animal paid no attention to its surroundings, lying in whatever posture it was placed.

(2) There was a slight serous discharge from the eyes.

(3) An occasional discharge of very fluid fæces was observed, which led to a matting of the fur about the tail and hind-quarters.

(4) The animal was very thin.

This cub, contrary to expectations, recovered, and after being under observation for several days was returned to the ranch. On admission to the laboratory, leptospiras morphologically resembling the *Leptospira ictero-hæmorrhagiæ* were demonstrated in the urine and fæces, but two days after the animal's recovery none could be found, the fæces became normal, and on subsequent examination leptospiras could not be detected.

The cubs subjected to *post-mortem* examination had been dead for from 24 to 36 hours: portions of the spleen, liver and kidneys of the freshest specimens from Ranches A and B were used for biological examination; but the results were vitiated by the length of time the cubs had been dead. Wet films, using dark ground illumination, and films stained by Giemsa's method were examined from the blood, liver, spleen, kidney and lymph glands. In only one case was a satisfactory demonstration by dark ground illumination obtained. This case will be referred to later as Cub 5, Ranch B.

POST-MORTEM FINDINGS

(1) *Two Cubs from Ranch A.*

In each animal there was evidence of severe diarrhœa, marked jaundice, patchy congestion of the lungs, and marked congestion of the spleen, which organ extended practically the whole length of the abdominal cavity. In one cub epistaxis had occurred. In each case leptospiras morphologically resembling the *Leptospira ictero-hæmorrhagiæ* were observed in films prepared from the spleen, kidney and liver, the organisms being most readily demonstrated in the films from the spleen.

(2) *Five Cubs from Ranch B.*

In four of these cubs there was evidence of diarrhœa, enlargement and congestion of the spleen—almost to the same extent as in the cubs from Ranch A, and some congestion of the lungs, but jaundice was not marked and hæmorrhages were not seen.

In the fifth cub, which was somewhat older than the others, the lesions observed included: Congestion of the lungs, slight hydrothorax, petechiæ in the thymus gland, multiple hæmorrhages in the liver and kidneys—which in the latter organs were sometimes confluent—enlargement of the abdominal lymph glands, which showed numerous minute hæmorrhages. The spleen, however, was not enlarged, nor did it appear congested. Leptospiras were demonstrated in this case by dark ground illumination of films prepared from the blood and from the liver and in stained preparations from the blood, liver, kidney and lymph glands. This cub had died suddenly without showing signs of illness.

(3) *Two Fox Cubs* (ranch not stated).

In both, the lesions resembled those present in the four cubs from Ranch B; but, in addition, there was evidence of congestion in the small intestines; petechiæ were present in the cortex of the kidneys and in the musculature of the heart, especially at the apex and in the region of the coronary vessels, while the lymph glands of the body were enlarged and hæmorrhagic. In one cub evidence of hæmorrhage into the musculature of the thorax was noted. Leptospiras, as before, were obtained from the spleen, kidney, liver and lymph glands by stained preparations only.

Biological Examination

As the available material was stale and bacteria were numerous, biological examination was restricted to subcutaneous inoculation and the feeding of tissues from the freshest case from

each ranch. The guinea-pigs fed on the tissues survived, but each of those inoculated succumbed. The guinea-pig inoculated with material from Ranch A died within three days from a toxic condition. Leptospiras were demonstrated in the lymph gland draining the area of inoculation.

The guinea-pig inoculated with material from Ranch B showed an irregular temperature and lived until the eighteenth day after inoculation. On the sixteenth day after inoculation, however, its temperature rose suddenly and then fell gradually, becoming subnormal several hours before death.

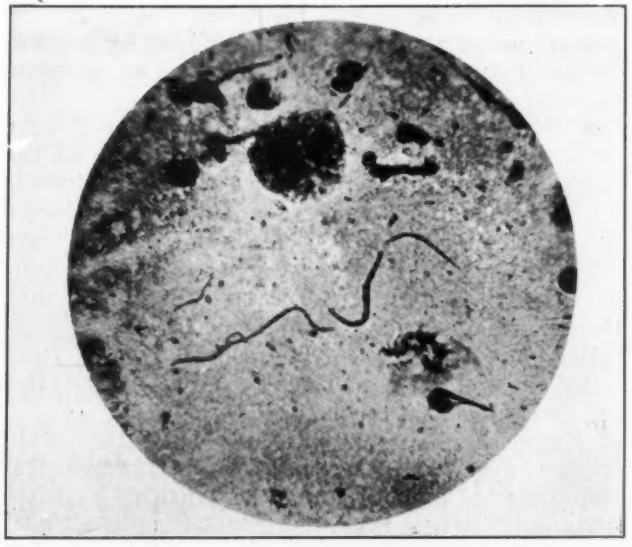
On *post-mortem* examination this guinea-pig showed extensive hæmorrhage into the liver; slight hæmorrhage into the kidneys; congestion of the stomach, small intestines and abdominal lymph glands; large areas of congestion in the lungs; petechiæ in the musculature of the heart. The spleen was not enlarged and did not appear congested. There was no evidence of jaundice. Leptospiras were observed in stained preparations from the liver.

Ranch C.—The guinea-pig inoculated with urine from the sick cub (in which leptospiras were observed, but which ultimately recovered) failed to develop the disease.

Within the limits of the above observations, it would appear that in this disease a variety of symptoms and of lesions may occur among the animals affected in one outbreak and on one ranch: examination of films from more than one tissue is advisable: apparently leptospiras in a viable condition may be demonstrated 24 hours after the death of the host.

Film from Spleen of Silver Fox-cub showing LEPTOSPIRA

(*Magnification* 500 *times approx.*)

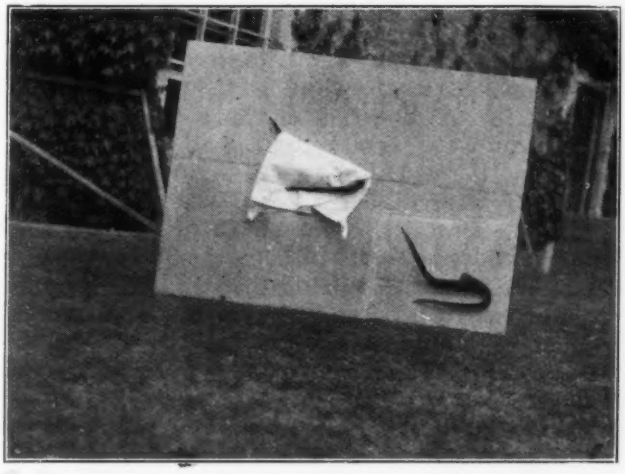


Five Leptospira; numerous bacteria, and tissue débris.

A GATE-HOOK CURIOSITY

J. R. BAXTER, M.R.C.V.S.
Lechlade, Glos.

The question which arises from consideration of the following is, how did the gate-hook (illustrated) get into position? The photograph shows the parts exposed when I first saw it in the side of a cow—on the left side of the chest, between skin and ribs. The piece of cloth represents the skin and leaves the two points exposed as seen. Superimposed on this photograph is an illustration of the hook after extraction; the measurements are 9½ ins. from long point past shoulder to curve; 6 ins. from short point to curve and 3 ins. across at shoulder.



The actual wound healed very quickly and hardly left a mark but I am still wondering how all the thick part and shoulder of the hook got under the skin when the skin wounds were so small and tight round the iron that I had to enlarge one with a knife to remove the hook. This, of course, is only a curiosity but it is, I think, of interest.

H.M. STATIONERY OFFICE PUBLICATIONS

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	Price Net. s.	d.	*Post Free.* s.	d.
Agriculture and Fisheries, Ministry of:—				
Diseases of Animals Acts, Report of the Proceedings for the year 1933. (24-27-0-33)	2	0	2	2
Command Papers:—				
[4678.] Cattle Industry (Emergency Provisions) Act, 1934. Particulars of Arrangements for Purposes of sect. 2 of the Act	0	3	0	3½

Abstracts

[**Surgical Treatment against Crib-biting.** Forssell, G. (Professor of Surgery, Roy. Vet. Coll., Stockholm). (1934.) Paper No. 59, presented at Twelfth Internat. Vet. Congress, New York. *Author's Summary.*]

The author gives an account of an operation against crib-biting in the horse. The operation consists of the excision (myectomy) of the sterno-mandibularis, omo- and sterno-hyoideus muscles, together with the sterno-thyroideus, in the upper half of the neck. It is carried out under general anæsthesia, presents no great technical difficulties, and is attended with but slight risk. To avoid tension of the recurrent nerves, the atlanto-occipital joint must never be stretched to its full extent, but only so that the nose forms an angle of at least 30° with a line running in the direction of the neck.

As a rule, the skin wound heals *per primam*, and the horse can be used again, beginning gradually, after about a fortnight. The results are good. One can count on 70 to 80 per cent. being rendered sound; of the other 20 to 30 per cent., one-half will be improved, while the remainder will continue to bite. But even if the crib-biting does not cease, the animals operated on will be free from attacks of colic and will gain in flesh. If any horses try to bite after being operated on, they must be prevented from continuing the habit. This diminishes the risk of the excised parts of the muscles being replaced by tendinous tissue.

To prevent wind-sucking, a flute-bit is recommended, the perforated pipe being replaced by iron rods, united in the manner shown in figure 2 [of original paper].

* * * * *

[**Infectious Bovine Mastitis.** Christiansen, M., and Nielsen, F. (Royal Veterinary and Agricultural College, Copenhagen, Denmark). Paper No. 39, presented at Twelfth Internat. Vet. Congress, New York. *Author's Summary.*]

Experimental investigations are carried out to throw some light on the important question of in what way and under what conditions the infection of the milk gland takes place. These studies are made chiefly with a certain strain of mastitis streptococcus which appeared particularly suitable for the purpose, partly because it has considerable virulence, and partly because some of its properties (pronounced β-hæmolytic power and characteristic fermentation reactions) make it easy to differentiate this strain from the prevailing streptococci in mastitis.

On inoculation through the teat canal this streptococcus produced typical acute mastitis even when the dose injected was relatively small (0·00005 c.c. of a 24-hour serum-broth culture), and this infection soon changed into a chronic form, leading to agalactia. While introduction of this organism through the teat canal as a rule gave rise to mastitis, it was found practically impossible, in spite of numerous attempts, to produce any infection of the udder by external infection of the teat, even when this infection was very intensive, provided the teat was normal, that is, that its sphincter was not impaired. The external infection is accomplished partly by placing the teat in a rubber sac containing streptococci (culture or secretion), partly by means of an infected bandage applied to the udder and teats (after Klimmer and Haupt's method) which is removed only during milking, and otherwise has been applied continuously for days, and partly by means of infected bedding kept heavily infected for a considerable length of time with streptococcus cultures or with secretion containing numerous streptococci. These experiments, carried out on many cows in different stages of lactation, have shown how extremely difficult it is even for highly-virulent mastitis streptococci to gain entrance into the teats with normal sphincters.

If, on the other hand, the closing mechanism is impaired, resulting in insufficiency (for example, sores on the tip of the teat, bloody or blunt dilatation of the teat canal produced experimentally, etc.), it is easy in many cases to produce mastitis with the above-mentioned technique, particularly when the lesions on the teats are recent, but also often in cases where the lesions have been healed for some time, if only they have brought about insufficiency. Experiments on production of insufficiency by other means (for example, by temporary paralysis of the nerves of the teat through epidural anæsthesia or through injection of anæsthetics into the teat) gave negative results as to development of acute mastitis. The same applies to experiments intended to lower the resistance of the teats and the udder by general or local exposure to cold, and thus to promote invasion of the streptococci.

Experiments in which a streptococcus culture was rubbed into scarifications on the tip of the teat and on the udder, as well as experiments in which a streptococcus culture was injected subcutaneously into the teats or udder, were likewise negative as to the production of mastitis. The same applies to experiments in which large amounts of a streptococcus culture were given *per os* for a considerable length of time, with or without concurrent medicinal irritation of the intestinal mucosa.

Experiments on hæmatogenous infection of the udder are carried out by injecting varying amounts of a streptococcus culture into the mammary artery (*Truncus pudendo-epigastricus*). It was found that in this way it is practicable, with a fair degree of certainty, to produce mastitis by injecting large amounts of culture (10

to 30 c.c.), whereas no take was obtained with doses of 2·5 to 5 c.c., that is, large amounts of streptococci such as never occur under natural conditions.

On the whole, these experiments show that under natural conditions it is hardly conceivable that mastitis infection may arise in any other than a galactogenous way. Impairment of the closing mechanism of the teat promotes the infection to a great extent. However, as most cases of mastitis develop without any preceding lesion of the sphincter of the teat, and as we have not been able to produce mastitis artificially by external infection of the teat when its closing mechanism is unimpaired, it must be assumed that under natural conditions there must be some factors as yet unknown which govern the entrance of bacteria by way of the teat canal.

* * * * *

[**Blood Groups in Animals.** Szymanowski, Z. (Veterinary Faculty, University of Warsaw). Paper No. 26, presented at Twelfth Internat. Vet. Congress, New York. *Author's Summary.*]

The blood-group question is a very recent one in physiology and related sciences. It has developed with an astonishing rapidity during the last 15 years and has brought forth an intense response in medical practice (blood transfusion), in medico-legal practice (researches in paternity, origin of blood stains), in researches of heredity, and in anthropology. This progress concerns almost exclusively the human being. The study of the blood groups in animals, which is the subject of my paper, is very much less detailed.

It is Landsteiner's law which constitutes the point of departure for all research work on the groups. It concerns the observation on the existence of four groups of human individuals according to the antigenic elements of the corpuscles and the isoagglutinins of the serum, namely:—

I. O—ab; II. Ab; III. Ba; IV. AB—O.

A and B indicate the antigenic elements; a and b the isoagglutinins, O the absence of one or the other. It follows, therefore, from the formula that in the same individual there never is a co-existence of the antigenic element and of the isoagglutinin which acts on it. The antigenic elements are a constant property of the organism, independent of race, sex, age, health, nourishment, etc. The isoagglutinins may undergo changes in intensity, but they always retain their qualitative character. The essential property of the antigenic elements and of the isoagglutinins is their hereditary transmission according to Mendel's law. A, B and O are multiple allelomorphs. A and B are dominant over O. The ability to produce agglutinins also is hereditary and has the dominant characteristic. The different human races are distinguished among themselves by the proportion A : B. Researches in the groups in man are simple and exact owing to the distinctness of the agglutination and the regular presence of isoagglutinins, required by the formula.

The groups in animals are sometimes difficult to define. Agglutination is much weaker. Physiologic agglutinins often are lacking and must be replaced by immunoisoagglutinins. There are also frequently cases in which the antigenic elements of the corpuscles and the isoagglutinins of the blood belong to the same group. This paradoxical statement is explained by the existence of secondary differences between the antigenic elements belonging to the same group. In spite of these difficulties, it was possible to prove the existence of a group differentiation analogous to that found by Landsteiner in man, for all species of animals examined up to the present. The same law of Landsteiner holds also in animals. There are, however, frequent exceptions. Most often one finds such a predominance of one antigenic character over the other that one can find no more than three groups of individuals, namely:—

I. A—O; II. O—anti—A; III. O—O.

More extended researches have resulted in finding also element B with its corresponding combinations. This was the case with sheep and swine. In cattle the physiological isoagglutination exists in only 1·3 per cent. of the cases. Special methods are necessary to detect the blood group in these. In horses, the secondary groupings obscure the clearness of the differentiation. From a biochemic point of view, the blood groups in animals are by no means identical with the same groups in man. Cross-agglutination between two species is not at all the rule. It is rather the exception. The detailed analysis of the antigenic elements, chiefly of A, and of the different species demonstrates sometimes a partial affinity, the existence of partially antigenic elements, common to two species, especially in man and in different species of animals. The anthropoid apes are the only exceptions. They have antigenic elements qualitatively identical with those in man. Therefore, the serum of these apes agglutinates the corpuscles in human individuals of the corresponding group.

* * * * *

[**Recent Progress in Veterinary Surgery.** Guard, W. F. (Professor of Veterinary Surgery and Director of Clinics, College of Veterinary Medicine, Ohio State University). Paper No. 44, presented at Twelfth Internat. Vet. Congress, New York. *Author's Summary.*]

Progress in veterinary surgery has been gradual and largely dependent upon the adaptation of certain methods used in human surgery. The small value of most of the domestic animals and the difficulties encountered in surgical aftercare have constantly presented two great

barriers to progress. One of the fundamental steps toward progress was the improvement of anæsthetic methods, making them applicable in practically every surgical operation, no matter how small. Another step toward progress was the change from antisepsis to asepsis. Along with these fundamental forward movements went a renewed interest in regional anatomy, surgical pathology, surgical technique, the modernisation of surgical wards, and improved methods of diagnosis and teaching.

Considerable progress has been made lately in the use of solutions of pentobarbital sodium (nembutal) intravenously for the dog and the cat. Great advances have been made in the general application of local anæsthetics to all species of animals. Nerve blocking, which formerly was used solely for the purpose of diagnosing lameness in the horse, has been adapted to other purposes and conditions. There are now various methods for blocking the mandibular and maxillary nerves in the horse and the dog; also methods of nerve blocking for dehorning cattle. Epidural anæsthesia has become very popular in bovine and equine dystokia, and applicable to certain operations upon the tail, rectum, and generative organs of animals.

Progress in the application of the principles of asepsis in all surgical procedures has been very noticeable during recent years. Sterile shrouds and packs for protection during operations are quite commonly employed. Clean garments, thoroughly prepared hands, and to an increasing extent surgeons' sterile rubber gloves, are being used in hospital and field work. Likewise, much thought is given to the post-operative care.

Operative technique has been improved for some operations; for others, new techniques and mechanical appliances have been developed. The importance of making use of the aponeurosis and the fascial layers has been recognised as a necessity for good surgical technique. Improved methods are now available for rumenotomy, for repair of recto-vaginal fistula and vagina fissures, for treatment of fistula of the withers and of cervical choke, and for the operation of umbilical hernia. The Scarff method of aseptic end-to-end suture of the intestine must be considered a decided improvement in technique for enterectomies, and one that is very practical for animal surgery. The occurrence, symptoms, pathology, and treatment of otitis media have recently been described in the veterinary journals. Further progress is shown in the application of skeletal traction and the use of the modified Thomas splint in the treatment of fractures of the extremities of small animals. Great progress has also been made in the technique of dealing with bovine mastitis.

Roentgen-ray equipment has been installed in several of the veterinary colleges. To-day, the use of X-ray in veterinary surgery is becoming a reality. Its value as an aid to the diagnosis and treatment of certain conditions affecting animals cannot be questioned. Its application in the field of practice is somewhat limited owing to practical economics.

Motion pictures have been successfully used for demonstrations in teaching veterinary surgery.

* * * * *

[Parasites of Urinary Organs in Silver Foxes. (Trans. title.) Schmid, F. (1934.) *Berl. Tierärztl. Woch.*, L (3), 33-36.]

Nodules containing living larvæ of (apparently) *Toxascaris* were found by Schmid in the kidneys of 85 per cent. of the silver foxes at a farm in Upper Hessia. Similar nodules were found in the kidneys of a young dog near Giessen. The urinary bladders of the silver foxes were infested with *Capillaria plica*, also to the extent of 85 per cent. Inflammatory changes and hæmorrhages were found in the vesical mucosa. Neither the ascaris larvæ nor the capillarias were giving rise to clinical symptoms.

B. G. P.

(Contributed by the Imperial Bureau of Agricultural Parasitology.)

CANADIAN INSTITUTE OF PARASITOLOGY OPENED

Before a distinguished gathering of leaders in the fields of agriculture and science, as well as members of the faculties of many Canadian universities, the Institute of Parasitology was officially opened recently at Macdonald College, Ste. Anne de Bellevue, Quebec.

W. M. Birks, Senior Governor of McGill University, presided at the ceremony, representing E. W. Beatty, K.C., the Chancellor, who was unable to be present. The main address was delivered by Dr. H. M. Tory, of the National Research Council, who was officially representing the Federal Government. After his address Dr. Grenier, Deputy Minister of Agriculture of Quebec, officially opened the Institute by handing the keys to Dr. T. W. M. Cameron, Director of the Institute and head of the Department of Parasitology, Macdonald College (late of the Royal [Dick] Veterinary College, Edinburgh).

Dr. Grenier, who acted for the Hon. Dr. Adelard Godbout, Minister of Agriculture for Quebec, who was unable to attend, received on his behalf a key to the Institute enclosed in an ornamental box, which was presented by Dr. Cameron as a permanent memento of the Institute and of the work of the Provincial Government in establishing it.

In a short address, delivered in French, Dr. Grenier congratulated the McGill authorities upon the opening of the Institute, stressed the importance of the work being done for agriculture and declared that aid to farmers in general was one of the outstanding duties of colleges and universities such as Macdonald and McGill.

Dr. Cameron, in the course of his reply, said that that was the first Institute to be established solely for the investigation of animal parasites, although, of course, there were others where agricultural parasitology formed part of the work. It would be their task and responsibility to keep Canadian parasitology at the high level which the Dominion had set in other branches of science and learning.

Reports

STATISTICAL AND GENERAL REPORT, ARMY VETERINARY SERVICES, 1933-1934

The average strength of horses during the year was 12,992, of which 1,443, or 11 per cent., were remounts. The average number daily under treatment was 668·75, or 5·15 per cent. of the average strength. The admissions for treatment were 92·48 per cent., and the average length of time during which each case was under treatment was 20·31 days. The wastage for veterinary reasons was 6·46 per cent. of the average strength.

The average strength of mules during the year was 328, of which the average number daily under treatment was 4·86 or 1·48 per cent. of the average strength. The admissions for treatment were 24·08 per cent. of the average strength, and the average length of time each case was under treatment was 22·48 days. The wastage of mules for veterinary reasons was 3·35 per cent. of the average strength.

The general health and condition of the animals in the Home Commands was good.

Remarks on Disease.—In horses, there were 583 admissions for general diseases, of which 395 were fever simple and 97 cases of debility. There were two cases of grass sickness in the Aldershot Command (one died and the other recovered) and one case in the Southern Command (destroyed). Respiratory cases numbered 1,198, the chief causes being catarrh, laryngitis, roaring and broken wind. Diseases of the digestive system numbered 1,801, 1,256 horses being treated for worm infestation. Skin disease admissions amounted to 759, the principal causes being acne, dermatitis, prurigo and ringworm. Only one case of sarcoptic mange occurred; no cases of psoroptic mange were reported during the year. One thousand four hundred and fourteen were surgical conditions, while admissions for injuries numbered 5,501. Specific disease admissions numbered 532 as against 216 last year; strangles 276 cases; influenza 246 cases were the main causes. Of the 246 admissions for influenza, 86 cases occurred at the Remount Depôt, Arborfield Cross, and 114 cases amongst the horses at the Equitation School, Weedon.

With regard to mules, there was nothing to call for comment.

EGYPT

The average strength of horses during the year was 1,849. Admissions for treatment were 91·50 per cent. of the average strength, the average daily under treatment 128·15, or 6·93 per cent., and the average length of time each case was under treatment was 27·65 days. The wastage of horses for veterinary reasons was 6·48 per cent. of the average strength. The average strength of mules during the year was 668 and the admissions for treatment 57·03 per cent. The average number daily under treatment was 24·60, or 3·68 per cent. of the average strength and the average length of time each case was under treatment was 23·57 days. The wastage of mules for veterinary reasons was 3·28 per cent. The condition and health of animals in the command was very good, and a high standard of animal management was maintained in all units. Beyond an outbreak of influenza which occurred in December, 1933, amongst the horses of the Cavalry Brigade and 1st Brigade Royal Horse Artillery, there was little upon which to remark.

ROYAL ARMY VETERINARY SCHOOL ALDERSHOT

During the year five courses of instruction were held:—

(*a*) One for regular officers R.A.V.C. (3 months).

(*b*) Two in animal management for officers of the combatant branches of the service (4 weeks each).

(*c*) Two in animal management for N.C.Os. (6 weeks).

Of (*b*) 39 were examined, four passed with distinction and 35 passed. Of (*c*) 60 were examined and 58 passed. One thousand one hundred and sixty examinations were carried out in the Laboratory during the year, the majority (814), being fæces for the presence of helminth ova infestation, and others being for the diagnosis of parasitic skin disease (199), and pus and allied material (109). Of vaccines and biological products, the following were prepared and issued: stock catarrh vaccine (4,091 doses); autogenous vaccine (128 doses); stock pustular dermatitis vaccine (1,904 doses) and spleen extract (2,370 doses). Three hundred and eighty-nine doses of anti-tetanus serum were issued and 34 doses of tuberculin. Of mallein the production and issue were as follows: subcutaneous (2,000 doses produced, 1,803 issued), and I.D.P. (6,000 doses produced and 6,106 issued).

In laboratory investigations, a study of the bacteriology and immunology of pustular dermatitis was commenced. Seventeen cases were examined and 25 strains of *Staphylococcus aureus* were isolated. Hyperimmunising experiments were also in progress with a view to ascertaining the extent of antibody production after vaccination, and the possibility of its application as a useful prophylactic. The use of a toxoid as a preventative is also being considered. In regard to radiology, the X-ray apparatus has been working satisfactorily. The demand for X-ray reports is still on the increase, and it has

been proved to be of considerable economic value in the prognosis of obscure cases.

SCHOOL OF FARRIERY, ALDERSHOT

The percentage of pupils qualifying as Farrier Class III was 97·26, and the average period each pupil was under instruction at the school was 6·34 months. The number of horses shod during the period was 2,397, the number of shoes put on was 9,188, and the number of shoes made 3,520. J. M.

* * * * *

DURHAM COUNTY COUNCIL

Chief Veterinary Officer's Report, 1933.

Commencing with a short introduction and a foreword on organisation, this report describes in detail the work carried out by the Veterinary Department in Durham County during the year 1933 under the Milk and Dairies Acts and Orders and the Diseases of Animals Acts and Orders.

In the first section of the report, dealing with the work done under the Milk and Dairies Acts, it is interesting to note that during the year under review the number of complaints received under Section 4 of the Milk and Dairies (Consolidation) Act, 1915, shows a reduction of 25 per cent. as compared with the number received during the previous year. The fact that the number of these complaints has steadily declined during the past three years in Durham County indicates that the regular routine inspections of dairy cattle are being performed by the veterinary staff in a most capable manner, especially in view of the greater activity of public health authorities at the present time in examining bulk samples of milk. Eighteen complaints were received under this Act during the year 1933, and investigations resulted in the detection of the guilty cows in 13 instances. In two cases the guilty animals had apparently been disposed of by the owners, and in the remaining three cases the biological test showed the milk at each farm to be free from tubercle bacilli.

Under the Milk (Special Designations) Order, 1923, there were in the county during the year four producers of "Certified" milk, two producers of "Grade A (tuberculin tested)" milk and 25 producers of "Grade A" milk.

The portion of the report dealing with the work of routine herd inspection under the Milk and Dairies Order, 1926, contains a great deal of interesting material, including tables showing details of this work and the results obtained. During the year under review 4,829 visits were paid to farms and 47,864 cows were examined. As a result of these inspections 209 cows were slaughtered under the Tuberculosis Order, and in 87 cases the animals were affected with tuberculosis of the udder.

Under the Diseases of Animals Acts and Orders there was one case of anthrax in the county during the year, 19 cases of sheep scab, 28 cases of swine fever and 380 cases of tuberculosis. Of these 380 cases of tuberculosis, 209 were detected by the veterinary staff, 121 were reported by the owners, and the remaining 50 were reported by veterinary practitioners.

Attached to the Veterinary Department at headquarters there is a laboratory capable of dealing with the microscopical examination of all samples taken by the Veterinary Officers, and during the year 926 samples were examined, of which 146 were found to contain tubercle bacilli.

The report concludes with graphs showing the number of animals slaughtered under the Tuberculosis Order over a period of six years, together with the percentage affected with various types of tuberculosis. A summary of all cases dealt with under the Diseases of Animals Acts and Orders during the past four years is also given.

INSPECTION OF DAIRY HERDS

Chief Veterinary Officers

In a recent issue of *The Times*, the following communication, headed as above, appeared over the signature of Major-General Sir John Moore, K.C.M.G., C.B., F.R.C.V.S.:—

To the Editor of the Times

Sir,—A reference to Appendix 8 of the Report of the Cattle Diseases Committee of the Economic Advisory Council will show that there are 45 counties in England, Wales and Scotland without a whole-time veterinary staff, and in particular a chief veterinary officer. It is true, as stated in the column of remarks, that in six instances local authorities are considering the appointment of a whole-time veterinary officer, but the fact remains that a large number is still wanting in this respect. Furthermore, there are 29 counties where no routine veterinary inspections are carried out.

If Great Britain is to be assured of a safe and disease-free milk supply, I am of opinion that the Ministry of Agriculture should enforce the obligation of counties to appoint a chief veterinary officer for the control of animal disease within his county, at a salary commensurate with his abilities and in conformity with the scale fixed by the National Veterinary Medical Association. I speak from first-hand knowledge, having served on the Cattle Diseases Committee.

The chief veterinary officer could then formulate a plan of campaign for regular routine inspections of all dairy herds within his county, and it might be left to him to mobilise veterinary practitioners within the county for the control of disease until such time as the State Veterinary Service was inaugurated under the terms of the recommendations of the Cattle Diseases Committee. The general public is anxious that a safe and disease-free milk should be put on the market, and it seems to me to be desirable and necessary that the local authorities of counties in the first place should put their own house in order in the manner I have indicated. Unless this is done that scourge of humanity—tuberculosis of bovine origin—will continue, as will other diseases incidental to the success of our live stock industry.

Yours faithfully,

John Moore,

16, Frognal Lane,
Hampstead, N.W.3.
September 7th, 1934.

N.V.M.A. Divisional Reports

NORTH WALES V.M.A.*

CATTLE DISEASES REPORT DISCUSSED AT LLANDUDNO

A meeting of the Division was held at the North Western Hotel, Llandudno, on Friday, July 27th, 1934. The President, Mr. R. L. Lewis, occupied the Chair, and there were also present Messrs. Booth, Burrow, Butler, Cartwright, Llewelyn Jones, Professor Share-Jones, Messrs. W. Jones, W. O. Jones, Wynn Lloyd, Savage, H. Williams, Woodhead, Wynne, and H. V. Hughes (Hon. Secretary). The following attended as visitors: Messrs. Manley, Parry and Thomas. Apologies for absence were received from Messrs. Cane and Edwards.

The Minutes of the last meeting having been published in *The Veterinary Record*, were taken as read and were confirmed.

Dr. Share-Jones Congratulated.—The President expressed his pleasure at the high honour which had been bestowed upon one of their members, Professor Share-Jones, by the University of Berne, in conferring on him the degree of Doctorate *honoris causa* at the centenary celebrations of that University. He felt sure that he was voicing the sentiments of all present when he extended his congratulations to Professor Share-Jones. Professor Share-Jones expressed his thanks to the President and members for their good wishes.

Correspondence.—(1) From Mr. Wynne Williams, Dolgelley, thanking the Division for their expression of sympathy in his bereavement.

(2) From the Secretary of the Royal College of Veterinary Surgeons, relating to the Library Appeal. Consideration of this letter was deferred.

The South Wales Division.—It was unanimously agreed that the Secretary be instructed to convey a message of greeting and good wishes to the newly-formed South Wales Division.

Nomination.—On the proposition of Mr. Llewelyn Jones, seconded by Mr. Booth, Mr. W. Jones Parry was nominated for membership.

Royal Sanitary Institute Congress.—The President then invited Professor Share-Jones to give the meeting some report of the proceedings at the Congress of the Royal Sanitary Institute at which he had been asked to act as representative of the Division. Professor Share-Jones said that he had not anticipated that he would be called upon to give them an account that day or he would have prepared a report in the usual way. He could say, however, that the Bristol Congress had been a very successful one and particularly so the Veterinary Hygiene Section, over which he had the honour of presiding. The subjects dealt with in that section were largely concerned with milk and meat, and in his Presidential address he had dealt with the relationship between our science and the nation's food supplies derived from the animal industry. There were good attendances at the sessions and the lively interest displayed proved that the subject was regarded as of great importance generally. He noted that the medical men and sanitary inspectors took a prominent part in the discussions. He thanked the members for appointing him as their delegate and offered to supply any member with a copy of his address.

The President thanked Professor Share-Jones for his remarks and for his offer to supply copies of his address for discussion. It was agreed that the subject be discussed at the next general meeting of the Division.

Report of the Economic Advisory Council's Committee on Cattle Diseases

Mr. H. Burrow was then called upon by the President to open a discussion on the report of the Economic Advisory Committee on Cattle Diseases. In complying, Mr. Burrow said:—

The Cattle Diseases Committee of the Economic Advisory Council was constituted in 1932 in order to consider what practical measures can be taken to secure a reduction of disease among dairy herds; to suggest improvements in the existing administrative practice; and, in particular, to review the question of reducing bovine tuberculosis and improving the milk supply. That Committee was composed of eminent men closely associated with cattle husbandry and was assisted by verbal and written evidence supplied by veterinary experts, both whole-time officials and private practitioners. Their Report, which was presented to Parliament in May of this year, may therefore be taken to represent the considered opinions of those best versed in the problem of herd management and of cattle diseases. The Report does, however, lend itself to considerable discussion and to some degree of criticism, both constructive and destructive.

One can assume that the Members present to-day have studied the Report in some detail, and one proposes to single out certain points for comment rather than to recite merely a summary of the Report. We will therefore deal with the Principal Conclusions and Recommendations, in the order in which they are set forth in the summary given in Part 4 (page 87) of the Report.

It is stated that cattle diseases in dairy herds are responsible for an annual loss of approximately £3,000,000; that the milking life of dairy cows is only half of what it ought to be, and that 58 per cent. of herd-wastage is due to disease. The four principal diseases cited as the cause of this loss are bovine tuberculosis, contagious abortion, mastitis and Johne's disease. Some may think that this list might well have been extended so as to include parasitic dis-

*Received for publication August 2nd.

eases of young dairy stock (including liver fluke and stomach worms) and the warble-fly scourge, both of which are of more serious consequence than is evidently supposed, and which affects dairy herds both directly and indirectly, by reducing the efficiency of young stock which represent future recruits to the herds.

The Committee find at least 40 per cent. of cows react to the tuberculin test and that cattle in the early stages of tuberculous disease excrete tubercle bacilli in great number. It is doubtful whether this latter statement is absolutely correct; many of you will recall how difficult it is to discover tubercle bacilli in sputum, or even to *obtain* a sample of sputum, from a cow suffering from early tuberculosis of the lungs. Similarly, we know from our own experience that in the very early stages of tuberculosis of the udder a milk smear from the affected quarter shows only a very sparse scattering of tubercle bacilli. On the other hand, the Report states that calves born from infected mothers are nearly always free from the disease. I submit that congenital tuberculosis in calves is a far more common occurrence than this Report recognises.

The Report deals very scantily with contagious abortion, Johne's disease and mastitis. The Committee concluded that undulant fever in humans transmitted *via* milk from abortus-infected cattle is of little consequence, and despairs of the practicability of taking measures to reduce the incidence of undulant fever in man. One would have expected to have heard some conclusions as to the danger of abortus-infected milk to calves, and the possibility of the spread of the disease by that means among cattle themselves irrespective of any danger to human consumers of milk.

Johne's disease is dismissed in a very few words. The Report says the disease is increasing in certain districts, that there is no reliable diagnostic agent for the early detection of the disease and that there is no known cure. One feels that the scheduling and reporting of at least the clinical and obvious cases of Johne's disease might have been advocated, as when once the presence of disease in an animal is evident it is surely bad policy to stand by and see gross contamination of pastures, etc., going on unchecked, even though one realises that some contamination has already occurred before the animal developed clinical symptoms. Again, I submit that it is wrong to allow the free movement of clinical cases of Johne's disease from farm to farm and from auction to auction, as is done at present.

As regards mastitis, the Report is very vague as to the effect on human health which may be caused by consumption of milk from cows affected with mastitis. The most common epidemics carried by milk are stated to be scarlet fever, enteric fever, diphtheria, paratyphoid and septic sore throat. The first four of these being essentially human diseases, and not shared by cattle, may be spread by milk in a passive manner only, being due to contamination from human sources; no blame attaches to the dairy cow in connection with these outbreaks. As regards septic sore throat, the Report does not clear up the point as to whether this condition arises from the consumption of milk from cows affected with mastitis, and leaves that point just as indefinte as it has always been.

The Report now goes on to deal at great length with the question of bovine tuberculosis, its relation to public health and suggestions for its control and, finally, eradication. In fact, the Report is almost wholly devoted to this subject and so far from being, as the title suggests, a report on cattle diseases, it becomes a purely public health report dealing with infection of man with bovine tuberculosis and with the future policy of safeguarding the human population, taking very little notice of the health of cattle except in so far as it concerns public health.

Dealing with pasteurisation of milk, the Report dismisses practically all the previous arguments levelled against pasteurisation and decides finally that any nutritive value of milk which may be lost through pasteurisation (destruction of vitamins) may easily be made good by the addition of pure substances rich in those vitamins, and that pasteurisation is a desirable safeguard for the public against infected milk. Later in the Report, however, it is stated that many pasteurising plants are inefficient and in dealing with the future grading of milk it is recommended that both pasteurised and sterilised milk be included in the grades to be offered for human consumption. If pasteurisation is all that is claimed for it, surely there is no need for sterilised milk, but in view of the uncertainty which surrounds the effectiveness of pasteurisation, I suggest that in the future grading of milk the only method allowed for the heat treatment of milk should be complete sterilisation and that milk should be of two grades only: 1. Certified Milk from tubercle-free herds; 2. Sterilised Milk.

One feels from reading this Report that the Committee did not feel fully confident of the efficiency of pasteurisation and so suggested the inclusion of a grade of sterilised milk, but that they were content to use pasteurisation as "a sword to hold over the heads of milk producers" and stampede them into agreement with the Committee's scheme for the eradication of bovine tuberculosis.

The Committee's criticism of administrative measures at present in force in regard to cattle diseases affecting the milk supply is to some extent justified. The Tuberculosis Order is criticised as having failed to reduce the incidence of

bovine tuberculosis. But the Order was not intended for that purpose; it was purely a corollary of the Milk and Dairies (Consolidation) Act and instituted as a means whereby cases of tuberculosis of the udder, principally, could be dealt with by slaughter. As such it has served a useful purpose, and as regards the disease amongst cattle themselves, while it may not have reduced the incidence, it cannot have failed to prevent in some measure an even higher incidence of tuberculosis in our herds. The Epizoötic Abortion Order has admittedly been ineffective, partly because of its limited scope and partly because it fails to provide for proper veterinary examination of aborting cattle and for definite diagnosis of suspected cases. As regards the present grading of milk, it has for a long time been agreed that the grades and conditions under which they are produced are little short of being ludicrous, and all will agree that the hopes entertained that the grading of Certified and Grade "A" (t.t.) milks would result in the establishment of a large number of tubercle-free herds have met with disappointment. The lack of public demand for the higher grades of milk at slightly advanced prices has, I submit, had a greater influence in causing this disappointment than has the extra cost in veterinary fees, equipment and labour involved in production.

Turning to the proposals for the improvement of the milk supply, we find that these centre round three principal lines of action:—

1. An extension of routine veterinary inspection of herds.
2. An active policy for the eradication of bovine tuberculosis.
3. The grant to large urban authorities of the right to require pasteurisation of milk other than that produced from herds free from tuberculosis.

Some criticism is raised regarding the efficiency of veterinary examination of cattle and its usefulness in securing a safe milk supply. It is asserted that though clinical inspection reduces the amount of tuberculous milk passing into consumption, it can never make it safe.

One feels that in this Report veterinary inspection has not been given the credit due to it. Those of us who are continually sampling the milk coming into our towns are struck by the great reduction in the percentage of infected samples originating in counties which carry out routine examination of dairy herds. One is forced, however, to agree with the Report when it states that the total eradication of bovine tuberculosis from all herds is the only complete solution of the problem of tuberculous milk, but one does not agree with the policy of establishing isolated tubercle-free herds scattered throughout the country. If progress is to be made, large areas, such as counties, will have to be cleared of infection; otherwise the chance of reinfection of clean herds will be a great obstacle to their maintenance. Neither does one agree with permission for the promiscuous sale of reacting animals. Some control of reacting animals will have to be exerted; otherwise it will merely be a case of transferring infection from one herd to another.

The Report does not favour the adoption of a scheme to combat more than one disease at a time and suggests that tuberculosis be the first disease to be attacked. I am not sure whether this policy is the best one. Assuming that tuberculosis is finally controlled or even eradicated, we shall still be left with abortion, Johne's disease and mastitis, which by that time will have gained an even greater hold on our herds and which, in our enthusiasm for tuberculosis eradication, will have been even more neglected than they are at the moment. Will the cattle-owner, after so many years' struggle against tuberculosis, be left with any "heart" to start at the beginning again and turn to the eradication of these three diseases separately and each in their turn? If a concerted effort is to be made to clear our herds of disease then it would appear to be better to embrace these four principal diseases in one large scheme.

The Report now reverts to a further consideration of pasteurisation in respect of its compulsory adoption for all milk other than that from tubercle-free herds. This section contains a poorly-veiled threat that unless owners free their herds from tuberculosis, pasteurisation will be forced upon them, but the position of the producer-retailer on the outskirts of towns seems to cause some hesitation in definitely declaring pasteurisation as an alternative to tuberculosis eradication. It is difficult to understand why, if eradication is so urgent, the Committee should be so concerned about the welfare of a minority of milk producers who find themselves in this position.

We now pass to the final recommendations in the Report.

Among these recommendations we find some which are of paramount importance to the veterinary profession. The importance of the profession is here recognised as it has never been recognised before; we are at last looked upon as indispensable both in the control of animal diseases and in public health work. From the broad outlook, these recommendations should lead to the fulfilment of those hopes which have long been cherished by our pioneers. Comment on these recommendations is, however, the purpose of our meeting to-day, and I propose to criticise them if only to stimulate a discussion from every aspect.

That routine veterinary inspection of dairy cattle should be made obligatory for all local authorities will be agreed by all. In my opinion that inspection, if it is to be the first step in tuberculosis eradication, should be extended to

all classes of cattle, including beef cattle and young stock and, if eradication is to succeed, I suggest that all classes of farm stock, including pigs, which may be reservoirs of the disease, must be embraced in the scheme. The suggestion that the chief veterinary officer should only be appointed or dismissed with the approval of the departments of agriculture is an important one; it seeks to raise that official to the status and security at present enjoyed by medical officers of health. The suggestion that all veterinary officers should hold the Diploma in Veterinary State Medicine is a move in the right direction. This will call for facilities for the taking of this diploma at all our veterinary colleges, facilities which at the moment are not available to students studying at all centres. Whether the duties of non-county boroughs under the Diseases of Animals Act should be absorbed by the county councils is a debatable point. Where these duties have in the past been carried out satisfactorily, as they have been in some boroughs at least, there is little cause to transfer them to the county council.

We now come to the part of the Report which gives most cause for controversy amongst ourselves as a profession; I refer to the proposed expansion of a purely whole-time veterinary service to the exclusion of the part-time officer. This service cannot be established immediately, as the supply of whole-time officials is at present inadequate. It is suggested that the present part-time veterinary officers should be utilised as a *temporary measure* until a complete whole-time service can be established. Frankly, I do not like the tone or spirit of this suggestion. If we are to have a whole-time service then the fact must be faced, but to make use of part-time men simply because we are short of whole-time men and then to supplant them without any consideration for their past services or for their just claims for inclusion in the scheme, scarcely seems to be " cricket." This Committee realises that some at least of the present part-time men may, when deprived of their appointments, find the balance of their practice insufficiently remunerative and may be forced to forsake their districts, to the general loss of the agricultural community in their areas, and suggests that in those cases they should not be supplanted by whole-time men. On what basis will the decision to retain them or supplant them be made? I suggest that a minimum scale of income for private practitioners at present holding part-time appointments be decided upon and that if, after a careful examination of their returns, it is found that the loss of their appointments would reduce their income below that minimum, the case for their retention should be seriously considered. The suggested minimum income should not be lower than that of the whole-time men whom it is proposed to appoint in their place. This part of the Report will no doubt be extensively discussed by all the members present to-day, and I do not propose to monopolise the discussion on what to you, as part-time men, is one of the most important parts of the recommendations of the Committee.

Turning to the proposed scheme for the eradication of bovine tuberculosis, I am afraid that one cannot wax enthusiastic over the line of action proposed. The suggestions do not contain anything very new as compared with what is happening at present in the establishment of tubercle-free herds. The Report suggests free advice and free tuberculin-testing. Will that induce any but a few favourably placed owners to attempt eradication? Personally, I think it will not do so. The cost of testing is probably the cheapest item among the expenditure necessary for the establishment of a tubercle-free herd. Compared with the expense involved in replacing reactors, the cost of testing is very small. The Report strikes a weak note in suggesting the persuasion of owners to establish tubercle-free herds by offering " charity " in the form of free testing, etc., loans, and an increased price for tubercle-free milk, which latter can only be secured by securing a definite demand for such milk. In this respect, the Report shows a great weakness; it says to the farmer " we want you to establish tubercle-free herds; we will bribe you with promises of free testing, etc.; we will secure for you a higher price for your milk " (but if there is no demand for better milk, then that will be impossible) " and if you do not clear your herds of tuberculosis, we will allow your Local Authority to insist on pasteurisation. If that Local Authority does *not* demand pasteurisation, you will, we suppose, be allowed to carry on as you are doing now." I submit that nothing short of a bold and compulsory scheme for the clearing up of herds, area by area, until the whole country is free from the disease will ever lead to the control of tuberculosis.

Turning to the proposed re-grading of milk, one must agree that a minimum standard of cleanliness for all milk, whether it is to be subsequently heated or not, is highly desirable. One sees no reason, however, for four new grades of milk. In the past one of the chief troubles in connection with graded milks has been the superfluous number of grades. Milk need only be of two grades:—

1. Certified Milk: *i.e.*, milk from perfectly healthy cows and not needing any heat treatment.

2. Sterilised Milk: *i.e.*, milk which needs heat treatment in order to make it safe. That heat treatment should be in the form of complete sterilisation and not in the form of pasteurisation which, it is admitted, does not guarantee safety, and which is merely a commercial process, utterly divorced from public health con-

siderations, for the purpose of prolonging the period of marketing ability of milk.

With regard to the recommendations concerned with other diseases of cattle, the Report suggests the continuance of the investigations now in progress. One point of interest is the recommendation that farmers might have their milk tested for the presence of streptococci through their own veterinary surgeon. It would have been as well if they had recommended that this duty be assigned to the officials dealing with tuberculosis eradication, thereby avoiding duplication of control. The small financial benefit which would accrue to private veterinary surgeons from doing this work would scarcely be worth the trouble involved, and, frankly, I regard this as a very poor substitute to the practitioner for the work he is to lose if excluded from the greater scheme of tuberculosis eradication.

The financial side of the recommendations is naturally governed by the policy adopted, but one feels that it might have been better to find the money necessary for financing the scheme by means of substantial duties on imported milk products than by making both the taxpayer and the milk industry of this country shoulder the whole burden.

In these remarks one has criticised the Report very freely, and that criticism has in the main been destructive. One would like, therefore, to throw out some constructive suggestions. As my time is short, I will make these suggestions as brief as possible.

Routine veterinary examination of all cattle, in both dairy and beef herds, should be instituted immediately. The present part-time inspectors and private practitioners in country practice would all be needed for this work for some years to come.

As the whole-time service expands, if it is found necessary to supplant part-time by whole-time men, a minimum average income should be decided upon, below which no part-time man should be forced by reason of his being deprived of his appointment. The welfare of every member of the profession must be kept in mind, and no section of it must be pushed forward at the unfair expense of another.

A panel-system for the treatment of all farm animals should be instituted, financed by a National insurance scheme covering all such animals.

Eradication of tuberculosis from both dairy and beef herds should be commenced by compulsory testing of cattle and elimination of reactors in breeding areas where self-contained herds are in the majority. Large areas, such as counties, should be mapped out and cleaned up in succession, finally embracing the whole of the country.

Reactors should be valued and taken over by the State. Government farms or depôts should be established to which reactors may be sent and maintained so long as their maintenance is economical. Other government depôts should be established for the rearing of heifers under scientific control as reservoirs of tubercle-free recruits to the depleted herds. The calves reared in these depôts would be provided in part by the reactors acquired by the State, as above, and in part by the purchase of heifer calves from herds in which calves are not at present reared, but sold for slaughter. The milk from reactors could, after sterilisation and the addition of compensatory foods rich in vitamins, be fed to these rearing calves. This would provide a large reservoir of clean young cattle which could later be handed over to owners in exchange for reactors removed from their herds, after making the necessary financial adjustments between the value of the confiscated reactors and that of the clean cattle substituted for them.

The financial backing for such a compulsory scheme of eradication might be found to a large extent in the proceeds of duties on imported milk products. The money required in excess of that amount could then reasonably be acquired by a levy spread over farmers, dairymen, butchers, livestock market authorities, etc., all of whom would benefit in one way or another from a healthy cattle population in this country. A levy spread over all these interests would be so small in respect of each individual interest that its effects would not be felt severely by any one of them.

Schemes should be devised for dealing with the other principal diseases of cattle simultaneously with the eradication of tuberculosis.

These brief and disjointed observations on some of the points raised by a consideration of the Report are offered as suitable points around which our discussion to-day may centre, and I hope that every member present will take full advantage of the many debatable points suggested in my remarks.

Mr. Llewelyn Jones, who followed, said that he had found himself unable, owing to pressure of duties, to deal with the Report as thoroughly as Mr. Burrow had done. He had, indeed, anticipated that Mr. Burrow would give them a detailed criticism and for that reason he had decided to confine his remarks mainly to broad principles.

Continuing, Mr. Jones said: "The formulation of any authoritative scheme to tackle cattle diseases will be welcomed by all and sundry, and the Veterinary Profession is to be called upon to perform the main part of this serious duty. The question that concerns the ***majority*** of the members of the profession, *i.e.*, the general practitioners, is whether it will be they who are to be employed to carry out this great work. I assume that you have all read part, if not all, of the Report issued by the Committee of the Economic Advisory Council, and you will have gathered that the general practitioner has been

almost entirely ignored. Personally I regret very much that the Committee did not see its way to set up a State Veterinary Service on the lines recommended by the Joint Parliamentary and Public Health Committee of the N.V.M.A. (see *Veterinary Record,* January 27th, 1934, p. 106). In such a scheme the *whole* profession would be under a new government department—a bureau of animal health—and every branch of the profession would be represented in one co-ordinated body under the control of one central governing department with direct veterinary control over its personnel. It appears to me, and I think the vast majority will agree, that this would have been the ideal step to take. Under this form of management schemes would be compulsorily and uniformly administered. Sir Merrik Burrell, in his reservations, favoured such a scheme as it would prove the most effective and economical, besides being truly national (see p. 99 of the Report).

Let me just review the constitution of the Committee responsible for this Report. The Committee was set up in 1932 by the Prime Minister. Let it be known to everybody that the veterinary profession was not consulted or approached in any way for help or advice, through either the R.C.V.S. or the N.V.M.A., as to those best fitted to serve on the committee, or as to its terms of reference. It consisted of seven members, only one of whom was a veterinary surgeon. Consider the problem which this committee was appointed to investigate—cattle diseases; yet it commenced its task with only one member of the profession serving on it. Such representation is preposterous and totally inadequate. A representation of one member only of the profession—with all due respect to Sir John Moore—cannot be considered to be adequate to deal with all aspects of the problems presented during the enquiry.

Now with regard to the evidence. The members of the profession who were called upon to give either oral or written evidence numbered 25. Of these, 12 were County or Municipal whole-time veterinary officers, two were from the Ministry of Agriculture, four were teachers, and three were research workers. Mr. G. P. Male and Lieut.-Colonel P. J. Simpson gave evidence as representatives of the N.V.M.A., whilst Mr. Nairn and Mr. Cumming represented the Scottish Branch of the N.V.M.A. Of the four last-mentioned, Colonel Simpson is not now a general practitioner, and the other three, although general practitioners, did not appear as representatives of the main body of the profession, *i.e.,* the general practitioners, but as representatives of the N.V.M.A. and one of its branches, whose views they were in duty bound to convey. Their position would not be exactly the same if each one were a free lance. But if we concede this reservation, and regard them as giving evidence as general practitioners, we have, even then, 12 whole-time municipal and county officers as compared with four general practitioners. I am aware, however, that one member of the teaching staffs, if not more than one, would, and did in fact, support the recommendation of a part-time service, but even then, there must have been an overwhelming weight of evidence in favour of a whole-time service as compared with the evidence on behalf of the part-time service. It is therefore only fair and natural to assume that the committee became strongly biased by all this evidence of whole-time officers on behalf of a whole-time service. That is certainly not British, and it is a positive injustice. The Committee should have secured evidence from at least as many general practitioners as whole-time officers.

From the latest information to hand, it is impossible to say to what extent the recommendations of this Advisory Committee will be put into force. The state of affairs, as far as we are concerned, is chaotic, but that is not what I have been asked to discuss. To discuss any matter with which you are disgusted makes it still more obnoxious, and the more I read and study this Report, the more am I disgusted, and not only disgusted, but also very downhearted. Thirty-one years ago I joined the ranks of a profession which had a very bright outlook, yet to-day there are many general practitioners who are about to be thrown aside after they have given their energy, time, knowledge and advice, and so assisted the nation to attain to the high position it holds in the world as regards its live-stock industry. This is one of the inhuman elements associated with this Report. Men who have borne the brunt of the battle as faithful servants of the agricultural community and the State are facing disaster after giving their very best for many years. If these recommendations ever become law, many a general practitioner will lose part of his livelihood, and in many instances this will mean an end to his practice. I maintain that they are entitled to human consideration.

It is all very well to say that it is part and parcel of evolution, and that these whole-time appointments will give employment to 300 veterinary surgeons. You will note that these officers must hold the D.V.S.M. Apparently they will gain their practical experience at the expense of some county or municipal authority. I know of instances to-day where comparatively recently-qualified men, holding the D.V.S.M., but with very little practical experience in the field, have displaced practitioners with years of experience and a sound knowledge of routine work and of cattle diseases—men who were as tactful with owners of herds as a diplomat is in his profession. If there must be a change-over from the general practitioner to the whole-

time man why can it not be done sympathetically and with tact? Would a *gradual* change-over not be the better way—employing those employed to-day and taking in as many as are needed of those who are not so employed but who have many years of practical experience, thus helping to keep them going as long as they are active. This gradual transition would be very much better than the sudden change recommended in the Report. It would lead to less disruption, fewer mistakes and a more efficient service more economically carried out. It would provide ample time for these new diplomates in Veterinary State Medicine to obtain practical experience and time for the older practitioners to leave this old world in the usual way. In this way the general practitioner will make his exit at least gracefully, proud of the part he has borne in maintaining his old country, but doubtless sad at the thought that the old country contemplates carrying on without him. On the other hand, the new creations will enter the arena decked in fine raiment, proud of the part they are going to take in eradicating tuberculosis, and glad that they will not be called upon to foal a mare or remove a decomposed after-birth and suffer from an abortion rash.

Some of us, perhaps, would be content if we were to be absorbed into the scheme and were allowed to supplement our incomes by means of these part-time appointments. Others, perhaps, wish to see the position of the general practitioner made more secure for all time by law and by right. It is only reasonable to expect the State to make use of the suitable material they have at hand and not scrap it for new material of unknown quality. I maintain that this Advisory Committee has shown lack of foresight. It should have realised that a country denuded of general practitioners is far from the ideal. The agricultural community must of necessity suffer from their absence, and a reversion to quackery and cruelty is bound to take place. For the same reasons I maintain that it is not, from an agricultural point of view, economically sound to pass any law which will deplete the country—a country whose back-bone is agriculture, with its millions of live-stock—of the general veterinary practitioner. If the practitioner of the future cannot live he must of necessity disappear, and that will be a national calamity. This is the strongest argument for retaining the services of the general practitioner to carry out State duties.

The accusations which this committee has made against the general practitioner are unfounded. We are not an incompetent branch of the profession, and we are not lacking in loyalty and integrity. There are black sheep in every profession; even the Church has them, but the Church is not judged by its black sheep. The same applies to medicine and to law. It would appear that the men who have passed that verdict upon us as a body must have biased views. It is so very easy to point out a disloyal action on the part of one or two men, but such an action is easily counterbalanced and outweighed by the life-long loyal service and integrity of a thousand good men and excellent citizens.

It is difficult to see what we can do. And our difficulty is rendered the greater by the chronic apathy of many in our ranks. If we do not wake up and afford every encouragement to those who are so gallantly fighting on our behalf the prospects of the general veterinary practitioner will be doomed and doomed for ever. The next 12 months will, I venture to say, be the most important in the history of the veterinary profession.

With regard to the conclusions arrived at by the committee, that mentioned on page 71, paragraph 183, is outstanding. This practically amounts to a vote of no confidence in the part-time man. For we are told that " their employment is generally unsatisfactory," and even their loyalty is questioned. In my view, this conclusion is arrived at undoubtedly because of the preponderance of evidence given by whole-time officials as compared with that of the part-time officials. The part-time man is branded as incompetent and lacking in professional honesty and integrity. That is the character of men who helped to stamp out glanders, pleuro-pneumonia, rabies, and other contagious diseases. This is an unwarranted insult to the profession as a whole and it will be deeply resented. In the same paragraph the report states in one place that the institution of the whole-time service will have such a serious effect upon the incomes of the general practitioners in certain districts that it is recommended that the practitioners be permitted to act in these districts as part-time officers. Yet, towards the end of the same paragraph it is stated that the whole-time service will induce the farmer to call in his own veterinary surgeon more freely for the purpose of treatment. Apart from the inconsistency, this is pure " eye-wash." Believe me, this does not occur in actual practice. In my experience I have found the position to be quite the reverse. Farmers to-day, by the score, are obtaining professional advice and information from sources other than the practitioner, the reason being, of course, that they get it for nothing. The same thing will happen when the whole-time officers give advice regarding the eradication of contagious abortion, Johne's disease and contagious mammitis. The work which the part-time man will lose comprises the following—all work under the Contagious Diseases Act, the Tuberculosis Order of 1925, and the Milk and Dairies Acts and Orders. He will not be required for the clinical examination of herds, and all tuberculin testing for accredited and attested herds will be taken from him. Furthermore, all the other work associated with schemes for the

eradication of tuberculosis will be done by others. This means a loss of £100 to £400 certain income annually. In some cases, doubtless, the loss will be greater. The result will be that many a practitioner will be unable to live and will have to " shut up shop." The agricultural community is bound to suffer and the country is bound to suffer.

Another undesirable effect of such a whole-time service as is recommended in this Report will appear when all the posts to be created have been filled. There will probably be a " stand-still " for some years, with no further vacancies open, and parents will be unwilling to allow their sons to enter a profession necessitating five years' training at college—a very expensive item—with only the prospect of an ill-paid general practice ahead, and the work strenuous and hazardous. Such a prospect will surely keep the best class of young man away. The general standard of the men entering the profession will thus be lowered and the status we have acquired in the past years will be lost.

Another point occurs to me in Appendix 8. Here the part-time service, even when it is combined with the whole-time service, is condemned. But this is surely not the fault of the part-time men. Hardly any county in the country—with the exception of Gloucestershire—has a part-time service properly administered or even encouraged by the county councils. It is surely the local authority that is to blame and not the part-time man who has not been authorised to do the work.

It is not considered British justice to condemn a man before proving him guilty. The part-time scheme has never had a fair and proper trial, so how can any committee pass a fair judgment upon it? In Gloucestershire, where the scheme is in vogue, the county council has expressed its satisfaction with the manner in which the work is being carried out, yet no one from that county was asked to give evidence before the commission.

What is the position of the N.V.M.A.? Our parent body is pledged to do all it can to urge a combined part-time and whole-time service. About 18 months ago every division sent to headquarters resolutions to this effect. During the last 15 months the Council of the " National " has passed four separate resolutions, which have been sent to the Ministry of Agriculture, the Economic Advisory Council and the Ministry of Health, urging a combined service of part-time and whole-time men. There is now a special committee working on these lines and they are endeavouring to persuade the Prime Minister and the Minister of Agriculture to receive a delegation. In Scotland the various M.P.s are being requested to bring the matter before the House of Commons. You will realise, therefore, that the profession is alive to the situation.

There are, of course, very many points regarding this Report which deserve attention. I am merely asked, however, to open the discussion and I must leave it to others to deal with the other matters which concern us.

The President said that they must all feel very indebted to Messrs. Burrow and Llewelyn Jones for their excellent remarks. Mr. Burrow had dealt with the question in a very able and unbiased manner. He had discussed the Report from the point of view of the whole-time officer. Mr. Llewelyn Jones, who did not happen to hold any part-time appointment, had given them an equally good criticism and had hit straight from the shoulder. The ground had been so well covered by these gentlemen that he felt that he had little to say at the moment. He desired to propose that the two papers be published at an early date.

Professor Share Jones said he wished to compliment the two openers of the discussion on their very sound contributions. He had, he said, himself given evidence before the Committee, and he had expected that the whole of the evidence would be published so that they might see how far the recommendations had been deduced from evidence submitted. He expressed alarm that such proposals as were contained in the Report should have been made, and he thought that they disclosed a striking lack of respect for the Veterinary Profession. He would like to know who had given a mandate for the institution of a State Veterinary Service. The matter was too important to be disposed of by a small committee. It was necessary that a Royal Commission should consider the whole of the Animal Industry. Only in this way could they hope to receive satisfactory consideration. It was not a matter of part-time *versus* whole-time officers. The problem was one of national importance. He would like to see the discussion of that Report deferred until the next meeting, for he felt sure that it was impossible to do justice to the subject that afternoon.

Mr. Wynne said he was in favour of continuing the discussion at the next meeting, when he hoped they would hear more on both sides of the question. He considered that there ought to be one whole-time officer for each county, and, if necessary, other whole-time or part-time officers in addition. He was in favour of including the practitioners in the scheme, for it would be found that they could not be dispensed with.

It was then agreed that the Council, with Professor Share Jones and Mr. Burrow as co-opted members, should meet without delay to draw up resolutions relating to subjects dealt with in the Economic Advisory Committee's Report for submission to a special meeting of the Division to be held at an early date.

It was agreed that the next (Annual) Meeting be held at Rhyl.

A vote of thanks, proposed by the President and seconded by the Honorary Secretary, to Messrs. Llewelyn Jones and Burrow, was passed amid applause, and the meeting then terminated.

Special Meeting at Llandudno

Following the foregoing, a special meeting of the Division was held at the Station Hotel, Llandudno Junction, on Saturday, August 25th, at 2.15 p.m. The President, Mr. R. L. Lewis, was in the Chair, and there were also present Messrs. Booth, Burrow, Cartwright, W. Hughes, Llewelyn Jones, Professor Share Jones, Messrs. W. O. Jones, Wynn Lloyd, Roberts, Savage, H. Williams, Wynne and H. V. Hughes (Hon. Secretary), Messrs. Harrop and W. L. Williams attended as visitors.

The discussion of the Report of the Economic Advisory Council's Committee on Cattle Diseases was continued, the majority of the members present taking part. A report of the Council of the Division was also read, and finally the following resolution was carried:—

> "The North Wales Division, having considered the Report of the Cattle Diseases Committee of the Economic Advisory Council, desires to express its gratification that a definite effort is being made to control some of the more important diseases of cattle in this country, and that the Veterinary Profession is recognised as of prime importance in the execution of any scheme to combat animal disease. The Division is of opinion, however, that the value of the services of the general practitioner has not been fully recognised, and that in the interests of both public health and agriculture the services of the general practitioner, as well as those of whole-time and part-time officials, are absolutely essential to the success of any scheme for the eradication of the diseases specified in the Report of the Economic Advisory Council's Committee. The Division begs to urge the Special Committee of the N.V.M.A. dealing with the Cattle Diseases Report to safeguard the interests of the general practitioner, especially in view of the effects which the recommendations of the Cattle Diseases Committee, as they stand at present, may have on his welfare and on the welfare of the agricultural community dependent on his services, and to make every endeavour possible to ensure that all general practitioners shall be incorporated in any scheme which may be launched for the eradication of cattle diseases."

A discussion followed on the reported inspection of cattle in certain areas by sanitary inspectors in the course of their inspection of cow-houses, and it was agreed that the Secretary communicate with the N.V.M.A. with a view to ascertaining the extent of this practice.

A resolution was also passed supporting the Wrexham Joint Live-stock Committee's resolution relating to the closure of country markets.

The meeting then terminated.

Howel V. Hughes, *Hon. Secretary.*

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LINCOLNSHIRE AND DISTRICT V.M.A.*

Spinal Anæsthesia Discussed at Peterborough

A meeting of the above Division was held at the Angel Hotel, Peterborough, on Wednesday, June 20th, 1934.

The President, Mr. G. Eaton, occupied the Chair, and there were also present: Messrs. Truman, F. L. Gooch, F. W. L. Gooch, Williams, Porter-Smith, Knowles, Standley, J. H. Poles, S. G. Poles, Hudson, Foster, Lockwood, Miles, G. Gibson, Junr., W. Gibson, Dickinson, Lang, Hill and H. C. Reeks, Junr. (Hon. Secretary).

SPINAL ANÆSTHESIA

Routine business having been dealt with, the meeting was addressed by Dr. G. B. Brook of the County Agricultural Institute, Derby. His subject was "Spinal Anæsthesia," illustrated by lantern slides and with demonstrations on the living subject. [For an account of Dr. Brook's contribution to the proceedings readers are referred to our issue of January 20th, 1934, pages 76 and 77, recorded on the occasion of an earlier address and demonstration on this subject by Dr. Brook.—Ed. *V.R.*]

Discussion

In opening the discussion Mr. Eaton said that he thought that they would all agree that the Veterinary Profession in this country owed Dr. Brook a debt of gratitude for the introduction of spinal anæsthesia. In his opinion it was one of the greatest benefits conferred on the harassed county practitioner since Schmidt's discovery of the inflation treatment of milk fever at the end of the last century. Armed with spinal anæsthesia and an embryotome, the majority of hitherto difficult calving cases were made easy. Straining and pain were all abolished and manipulation was greatly facilitated by the consequent dilatation of the vagina.

He had used the method for three years and had always found it extremely easy of application, invariably effective and without any undesirable sequelæ. Of course in employing the method, it behoved them to carry it out, whenever possible, with the care so well demonstrated by Dr. Brook. He had, however, successfully resorted to it on several occasions, in a poorly lighted cowshed at night and with nothing but a nail brush, ordinary soap and scissors to prepare the operation site.

The method had been of great use to him in ordinary dystokias and cases of uterine eversion, and generally speaking, with practice, the

* Received for publication, September 4th.

dose could be graduated according as to whether the operator desired the animal in a standing or recumbent position.

In one point he had diverted from the technique elaborated by Dr. Brook and that was in the selection of the needles used. He used an ordinary Record needle of medium size and bore—about half the length of the intraspinal needle, and consequently much easier to manipulate. In the majority of his cases the local anæsthetic employed had been Anasthene—a cocaine preparation. It was reasonable in price and he had always found it extremely effective and to have no undesirable after-effects.

Mr. Hudson said that he had always used chloroform freely and was loth to give it up, nevertheless he was very pleased with the method demonstrated by Dr. Brook, to whom he expressed his thanks.

Mr. Poles remarked that, although he had not used the method, he could conceive of it being very useful. For his part, he liked to keep the animal in the standing position for all obstetrical work.

Mr. Porter-Smith observed that if the method were as easy to apply in the mare as in the cow it would be of great assistance in cases of retained placenta.

Mr. Miles, after expressing agreement with the President in all that he had said in favour of the method, said that the only point in which he differed from Dr. Brook was in the choice of an anæsthetic. He used chlorocaine, 5 c.c. for a cow in the standing position, 10 c.c. if he wished to put her down. The standing position and the use of 5 c.c. was preferable. He enquired what needle Dr. Brook used for the dog.

Mr. Gooch, Senr., said that he had been very pleased with the demonstration and emphasised the necessity, in cases of eversion of the uterus, of securing correct replacement, and the use of a truss afterwards.

Replying to the various points raised, Dr. Brook said that he still used the long needles but after the experience of others, he would try the ordinary Record needle; they were certainly cheaper and easier to obtain.

He agreed with Mr. Gooch in his remarks about eversion of the uterus. Much depended on the position of the cow. The use of spinal anæsthesia was certainly more humane and avoided the surgical shock that might kill. He always used a truss. The great advantage of spinal anæsthesia over chloroform was that one was not confined to the prone position in obstetrical work.

With regard to needles for the dog, he had found that those used for the cow were quite applicable to canine work. When he used adrenalin it was the usual 1 : 1,000 solution and the dose the usual one—five minims.

In conclusion, Dr. Brook said that in bringing spinal anæsthesia to their notice, he would like to emphasise three points that concerned the practitioner: (1) it was undoubtedly a humane procedure for the patient; (2) it impressed the owner, and (3) it paid.

Mr. Gooch, Senr. proposed a very hearty vote of thanks to Dr. Brook. This was seconded by Mr. Eaton, and supported by Mr. Truman, who said that he should not like the meeting to close before he had expressed to Dr. Brook his sincere personal thanks. That was one of the most successful meetings that they had had for years, and he had great pleasure in proposing that Dr. Brook should be made an Honorary Associate of the Society. Mr. Gooch seconded the proposition, which was heartily endorsed by the meeting.

The proceedings then terminated, the members taking tea together before separating.

H. C. Reeks, junr., *Hon. Secretary.*

ROYAL COUNTIES V.M.A.*

Summer Meeting at Staines

The Summer Meeting of the Royal Counties Veterinary Medical Association was held at the Manor House, Staines, by invitation of the President and Mrs. R. A. Willett, who also entertained the company to tea.

The following members were present: Messrs. R. A. Willett (President), J. H. Addis, J. Willett, J. McIntosh, C. H. Howard, F. W. Willett, Major Tennant, Lt.-Colonel H. Greenfield, and Professor G. H. Wooldridge.

Mrs. R. A. Willett, Mrs. McIntosh, Mrs. Wooldridge, Mrs. F. W. Willett, Miss D. Willett, Mrs. Addis, Miss E. Chapman, Messrs. G. Dykes, F. J. Kinghorn, J. Francis and Miss Saunders were present as visitors.

Whilst the ladies were entertained to a short trip on the Thames, the business of the meeting was transacted and followed by an interesting discussion on several subjects, which included fractures in equines, and chloroform poisoning.

The following gentlemen sent apologies for absence: Major-General Sir John Moore, Prof. J. Buxton, Messrs. A. J. Baxter, J. R. Baxter, F. T. Trewin, H. Bell, R. E. C. Bullen, J. Bell, J. C. Coleman, G. W. Dunkin, D. Wyllie, J. McKerlie, H. Lepper, P. J. Simpson, A. E. Payne, H. G. King, Colonel Walker, Messrs. J. R. Hewer, T. M. C. Hunt, Captain S. Villar, Dr. Sheather and Major Hamilton Kirk.

A letter was read from Mr. H. Bell thanking the members for their gift to him on the occasion of his marriage. Mr. H. Bell is the enthusiastic Secretary of the R.C.V.M.A. and the members subscribed towards a gift in appreciation of the services to the Association and as a token of good fellowship. The gift took the form of a cheque which has been utilised in the purchase of easy-chairs.

*Received for publication September 3rd.

TWELFTH INTERNATIONAL VETERINARY CONGRESS

New York, August 13th-18th, 1934

The Twelfth International Veterinary Congress was a success from every point of view. The attendance, though perhaps somewhat smaller than was expected by many, nevertheless was gratifyingly large, and the membership approximately double that of any previous meeting. The entertainment afforded the delegates was both ample and delightful; the weather was agreeable and everything contributed to make an enjoyable week for those attending the Congress.

Veterinarians numbered 1,259, while Congress was graced with the presence of 523 ladies. The number of ordinary members was 2,527, of extraordinary student and lady members, 673. Eighty-two papers were read, and this week, in our Abstracts Section, we commence publication of author's summaries. As we informed our readers in our issue of September 1st the Congress elected as its President Dr. John R. Mohler, of the United States Department of Agriculture, Washington, D.C. The next Congress will be held in Switzerland (Berne or Zürich) in 1938.

Among the more notable excursions was one to the Walker-Gordon Farm, Plainsboro, New Jersey, and the Animal Disease Research Division of the Rockefeller Foundation; another attended by a majority of the foreign delegates was a trip to the New York State Veterinary College at Cornell University, Ithaca, New York.

The post-Congress clinic, on the Saturday following the Congress, likewise attracted a majority of the foreign delegates, where the latest technique in diagnosis and surgery was

Members of the British Delegation on Board s.s. Scythia.

Front Row.—Dr. Du Toit; Dr. J. R. Greig; Mr. C. V. Watkins; Major B. DeVine; Messrs. R. W. Mettam, D. Cumming, G. F. Banham.
Second Row.—Messrs. R. L. Cornell; D. Anderson; Captain E. E. Jelbart; Mr. G. H. Locke; Professor G. H. Wooldridge; Dr. F. C. Minett; Sir A. Theiler; Mr. J. Brown.
Back Row.—Captain R. Daubney; Major-General J. B. Tapley; Professor J. B. Buxton; Lieut.-Colonel P. J. Simpson; Dr. Bull (Australia); Professor W. M. Mitchell; Captain J. R. Barker; Mr. W. Nairn.
Other members travelled by different boats.

Photograph supplied by Mr. G. H. Locke, Manchester.

demonstrated by veterinarians of world renown.

Two tours were organised among the foreign delegates for the week following the Congress. The parties travelled together to Chicago, visiting Niagara Falls and the Ford Motor Company's works at Detroit *en route*. Three days were spent in sight-seeing in the city, visiting the stock yards, packing houses and the World's Fair.

At Chicago, the party divided, about one-fifth of them returning by way of Toronto, Ontario, Montreal and Quebec and the remainder going to Washington, D.C., where various government departments, particularly the U.S. Department of Agriculture, were visited. Following that, a day was spent at the School of Veterinary Medicine, University of Pennsylvania, Philadelphia, thence to New York, to begin the return trip to all parts of the world.

Perhaps the most enjoyable feature of the short stay in Chicago was a banquet given the visiting veterinarians and their wives by the American Institute of Meat Packers. This was a delightful affair at the Blackstone Hotel: no long speeches were indulged in but short talks were given by Professor Dr. R. von Ostertag (Germany), Professor Geo. H. Wooldridge (England), Professor Carlo Bisanti (Italy), Professor Jean Verge (France), Professor P. Rubay (Belgium), and Mr. Chas. E. Herrick, president of the American Institute of Meat Packers. Among the invited guests were the consuls of England, Germany, Belgium, France, Spain and Italy, credited to Chicago.

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POST-CONGRESS CLINIC

The Clinic was held on August 18th in the College of Pharmacy amphitheatre, Columbia University, a good view of the demonstrations being gained from every seat. To aid this, spot lights were placed brightly to illuminate the operations. Microphones were installed so that the operations could be described by the demonstrators in a natural tone and yet the whole audience could hear.

The clinic started at 9.30 a.m. and continued until 4.45 p.m., with three-quarters of an hour for lunch, which was served to the audience while remaining in their seats. The number in attendance varied from 450 to 500. The close attention of the audience throughout this long period, together with the large number of questions asked each demonstrator, manifested their interest. It was necessary for the chairman to restrict questions in order to complete the programme.

The following operations were performed and demonstrations explained:—

1. Epidural anæsthesia in small animals, by Professor E. J. Frick, Kansas State College, Manhattan, Kansas. Dr. Frick demonstrated that epidural anæsthesia is a very practical method of posterior anæsthesia and explained the cases to which it is most applicable.

2. Enucleation of the eye, with particular reference to suturing of lids, by Professors H. C. Stephenson and H. J. Milks, New York Veterinary College, Cornell University. This demonstration was skilfully performed and explained by Dr. Stephenson. To facilitate the explanation, a typewritten description of the operation was distributed to the audience, enabling it to follow every step.

3. Pharmacological demonstration on the circulation, by Professor H. H. Dukes, Department of Veterinary Physiology, New York State Veterinary College, Cornell University, assisted by Dr. J. Sampson, Cornell University, Ithaca, New York. This demonstration was a source of great interest to the veterinarians in attendance, since they had graphically shown and explained to them the effects of a large number of drugs on the circulation. It required a large amount of preparation and equipment and was an exceptionally valuable contribution to the clinic programme.

4. Reduction of large inguinal hernia, by Professor W. M. Mitchell, Royal (Dick) Veterinary College, Edinburgh, Scotland. The audience appeared to be greatly interested in this demonstration, since they were anxious to see how their colleagues from across the sea operate. There were many favourable reports from the audience. In the writer's opinion no operation on men or animals could have been more scientifically performed, nor with more nearly perfect aseptic and surgical technique. Dr. Mitchell has a great asset in combining wit with his thorough explanation, which kept the audience in high spirits. His demonstration of asepsis and surgery perfection gives the practising veterinarian a goal for which to strive.

5. Scarff method of aseptic end-to-end anastomosis of the intestines, by Professor W. F. Guard, Ohio State University, Columbus, assisted by Dr. D. A. Eastman, Eastman Small Animal Clinics, Moline, Illinois. Dr. Guard's manner of performing and explaining this operation showed his complete knowledge of the subject. Particular care was observed that the audience might note all the steps in the operation. Following this, Professor Guard further explained, by a blackboard diagram, the suturing of the intestines.

6. Cæsarean section in small animals, by Professor E. K. Sales, Michigan State College, showed many points which will be of great value to the practising veterinarian.

7. Simplified blood examination, by Dr. R. E. Nichols, Ohio State University, Columbus, Ohio. Dr. Nichols read a thorough paper on this subject, and it proved very interesting to the veterinarians, since it is a new field and one which is of great importance to them from a diagnostic standpoint.

8. Cecectomy, by Dr. D. A. Eastman, Moline, Illinois, was explained and demonstrated from the practitioner's point of view. The audience was very much interested in Dr. Eastman's demonstration, which gave evidence of the high standard of work achieved by the practitioner.

9. Setting fractured femur with needles, by Dr. A. K. Anderson, Los Angeles, California. Dr. Anderson demonstrated setting a fractured femur by drilling small strong needles transversely into the ends of the fractured bone, and then placing a splint over the ends of the needles, thus holding the ends in apposition. A very practical method. D. M. C.

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WESTCHESTER WELCOMES I.V.C. LADIES

In connection with the ladies' entertainment programme for the Twelfth International Veterinary Congress, a visit was paid to "Playland," the famous pleasure resort in Westchester County. Here, thanks to the initiative of Dr. Orville E. McKim, of New York, visitors were greeted by the words "Welcome I.V.C." displayed in immense letters of fire amongst the magnificent fire-work set-pieces, which are the chief attraction of this place of amusement. This was the first occasion upon which such a feature has been introduced by the management, and the courtesy was much appreciated and enjoyed by the visiting ladies.

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

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DIARY OF EVENTS

Oct. 1st.—N.V.M.A. Committee Meetings, 2, Verulam Buildings, Gray's Inn, W.C.1.

Oct. 2nd.—N.V.M.A. Council Meeting, Conway Hall, Red Lion Square, W.C.1.

Oct. 3rd.—R.C.V.S. Committee Meetings.

Oct. 4th.—R.C.V.S. Committee Meetings. Victoria Veterinary Benevolent Fund Council Meeting.

Oct. 4th.—Annual General Meeting of the Central Division, N.V.M.A., at the Royal Veterinary College, Camden Town, at 6.30 p.m.

Oct. 5th.—R.C.V.S. Committee and Council Meetings.

Oct. 8th.—Meeting of the Editorial Committee, N.V.M.A., at 2, Verulam Buildings, Gray's Inn, W.C.1, at 4 p.m.

Oct. 9th.—Meeting of the North Midland Division, N.V.M.A., at Sheffield.

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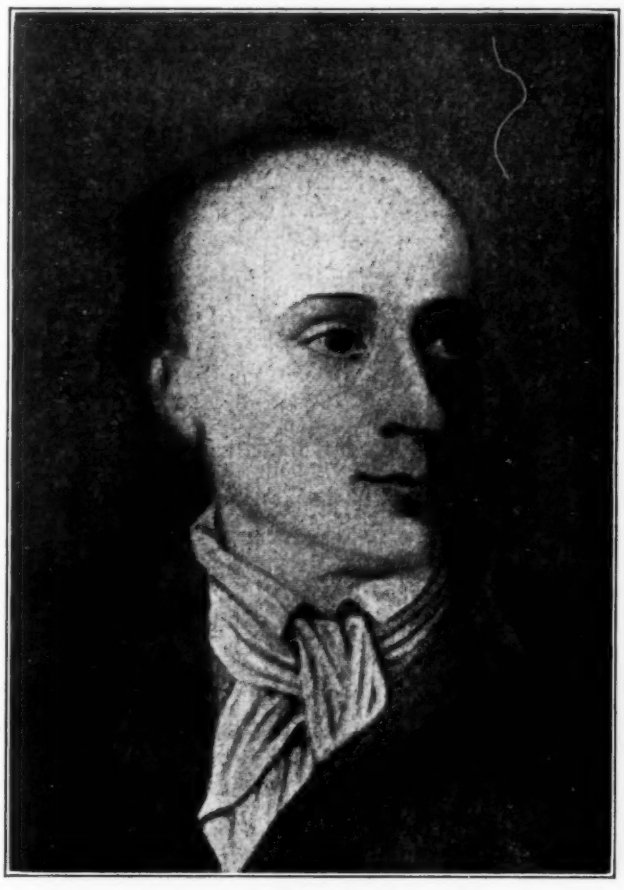
THE HISTORY OF VETERINARY EDUCATION IN DENMARK

The Danish veterinary school and its research departments to which C. O. Jensen—the distinguished pioneer in veterinary research who died on September 3rd last—was attached from his youth as teacher and investigator, is one of the oldest veterinary teaching establishments in Europe. It was founded in 1773 by an inspiring and distinguished teacher, Peter Christian Abildgaard, who was a medical man and had learned veterinary work at Lyons under Claude Bourgelat; the school was taken over by the State in 1777. Upon Abildgaard's death, in 1801, the management of the school was entrusted to his former pupil, Erik Nissen Viborg, who in his turn came to enjoy an immense European reputation. Both these remarkable men have left behind them lasting contributions to

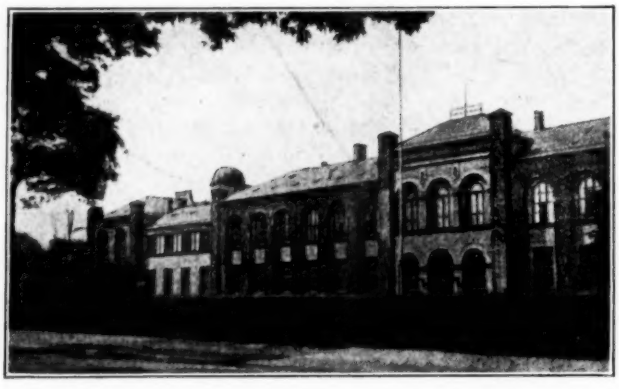


PROFESSOR ABILDGAARD.
Founder, Danish Veterinary School, Copenhagen.

the advancement of veterinary knowledge. According to L. Bahr, writing recently on this subject, one might say that the sequence at the school of Abildgaard and Viborg at one epoch in veterinary progress might be compared aptly with that of B. Bang and C. O. Jensen at a much later one.

The school attained a very high reputation under the direction of Abildgaard and Erik Viborg. After the death of the latter, however, in 1822, it was controlled for a number of years,

until 1844, by his family, at the head of which was his nephew, Carl Viborg. The school's reputation dwindled away very sadly under this régime. After Carl Viborg's death the management of the school happily fell into different hands, and the teaching posts were entrusted to excellent men, among whom were the anatomist H. Bendz, Prosch, and the veterinary surgeon



Main Building, Royal Veterinary and Agricultural High School, Copenhagen

Viggo Stockfleth. Then later under the influence of Bernhard Bang, who began his distinguished career as professor of pathology at the school in 1880, and soon afterwards of C. O. Jensen, G. Sand, and other competent and zealous teachers and investigators, including the surgeon Adam Vilhelm Mörkeberg, the physiologist Valdemar Henriques, the anatomists Krabbe and Simon Paulli, the zoologist Boas, and others, the school has experienced a wonderful renaissance, and it is to these men that she now owes her world-wide reputation as a teaching institution and research centre. C. O. Jensen is the last of this brilliant band of teachers to disappear—the physiologist Henriques, who commenced teaching at the same time as did Jensen, having long ago accepted a chair in the university, while the others have died. Fortunately, these men have left pupils behind them to continue the high standard of work at the school bequeathed to them.

Main Building, State Veterinary Serum Laboratory, Copenhagen. (Jensen's Laboratory.)

Abildgaard's original veterinary school became attached to the present "Royal Veterinary and Agricultural High School," in 1856. This school provides courses of instruction in veterinary science, forestry, agriculture, horticulture, and surveying, and it is controlled by a Director who is chosen from members of the teaching staff periodically; at present he is a veterinarian, Professor Carl H. Hansen. A grievance among the graduates is that they cannot proceed to any examinations for higher degrees when they have finished their training at the school, and if they wish to become doctors in veterinary science they have to proceed for the necessary facilities to the veterinary schools of other countries.

This note upon veterinary education in Denmark and the part he took in it is inserted as a supplement to the obituary notice upon Jensen which we published in our number of September 15th last.

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PERSONAL

Appointment.—Cardiff Corporation Health Committee have appointed Mr. John H. M. Hughes, M.R.C.V.S., D.V.S.M., from the Veterinary Department, City of Birmingham, as Chief Veterinary Officer for the city. Mr. Hughes, who qualified at Dublin in 1925, succeeds Mr. L. B. A. Grace, M.R.C.V.S., D.V.S.M., who was recently selected to follow Lieut.-Colonel T. Dunlop Young at Central Markets, Smithfield.

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Marriages.—Griffiths—Robinson.—On September 8th, 1934, Jeffrey Arthur Griffiths, F.R.C.V.S., Colonial Veterinary Service, to Elizabeth Cicely, only daughter of Mr. and Mrs. Herbert William Robinson.

Mullen—English.—At St. Austin's Church, Grassendale, Liverpool, on September 11th, 1934, by the Rev. B. FitzSimons, O.S.B., Anthony Leo Mullen, M.R.C.V.S., D.V.S.M. (Vict.), to Anne Helen, daughter of Mr. and Mrs. James English of Grassendale, Liverpool. Mr. E. A. Comer, M.R.C.V.S., D.V.S.M. (Vict.), of the Cheshire County Council, was best man.

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Will.—Miss Jane Hinchliffe, of Seal, Kent, and of Welbeck Street, W., who died on July 29th, left £5,448, with net personalty £668. She left:—

£105 to the Royal Veterinary College for general purposes, but preferably for appliances for radiography in connection with diseases of animals; £105 each to Battersea Dogs' Home and the R.S.P.C.A., and the residue, after other bequests, between the Battersea Dogs' Home and the Royal Veterinary College.

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Mr. J. A. Griffiths, F.R.C.V.S., Deputy Chief Veterinary Officer, Nigeria, sailed from Liverpool on September 26th, 1934, on completion of his leave in England.

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R.C.V.S. OBITUARY

Jamieson, James McCord, Captain late R.A.V.C., The Poplars, Mackworth, Derby. Graduated London, May 15th, 1889; died September 16th, 1934.

Leeney, Harold, 468, N. Broadway, White Plains, N.Y., U.S.A. Graduated London, July 2nd, 1877; died August 28th, 1934, aged 82 years.

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The Late Captain James McCord Jamieson, M.R.C.V.S.

(An Appreciation.)

In the passing of Captain James McCord Jamieson, very many veterinary practitioners, especially in Derby and the adjoining districts, have lost a respected and valued colleague.

Previous to the Great War for some 20 odd years Mr. Jamieson was in practice at Derby. He served during the Great War as a Captain in the Veterinary Corps. During his semi-retirement since that date he was in great demand as Locum Tenens, for if Mr. Jamieson was in charge one could rest assured that one's practice was in capable hands.

It was during this period that the writer came to know him, to appreciate his many qualities and to learn much from being in contact with him.

He was a sound practitioner of the old school, zealous in the pursuit of his profession and even in advancing years always keenly interested in new treatments. A surgery under his care was always a model of order and his attention to detail and method remain as an outstanding example to the younger generation.

Gardening was his great hobby, and his pretty little garden in Mackworth Village, with its neat hedges, weedless beds and complete order, together with his kindly smile, seemed to speak his character. Here one would find him actively engaged almost up to the last, until failing health compelled him to take matters more easily and only a few weeks ago he remarked pitifully to the writer: "I am not even allowed to garden now, except when they're not looking!"

An old friend has gone, but a valued memory will always remain. O. V. G.

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The Late Captain Harold Leeney

A correspondent informs us that Captain Harold Leeney's death followed a long illness. After leaving College he practised in the Brighton district for some years, eventually giving up practice and devoting his time and energies to literary work, in the capacity of Veterinary Correspondent to numerous journals.

Captain Leeney served in the R.A.V.C. in the Boer War; also in the Great War at an age when many men have ceased to lead an active life.

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FOOT-AND-MOUTH DISEASE IN LANCASHIRE

The recent outbreak of foot-and-mouth disease in Gloucestershire has been followed by one among cattle and pigs at Bacup, Lancashire.

The area subject to restrictions in the movements of animals lies in the counties of Lancashire and the West Riding of Yorkshire.

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NUMBERS OF MEDICAL STUDENTS

In the September 1st issue of the *British Medical Journal* (Educational Number, Session 1934-1935) it is stated that at the close of the last century the annual entry of medical students in the United Kingdom had been on the average about 1,800, and then for the next 13 years it stood at about 1,400. During the war period, though many students left to serve with the Forces, the entries grew steadily larger, so that in 1918 they were 2,253, and in the following year, when demobilisation was in active progress, they reached 3,420. In the next five years the numbers fell, but from 1923 to 1928 they remained at a fairly steady level rather below the immediate pre-war average. In 1929 the entries rose again to 1,502, and in 1930 to 1,792. In 1931 they were 1,643, in 1932 they were 1,947, and last year they were 2,287, the highest figure since 1920.

"In the past 14 years," says the *Journal*, "the numbers of new practitioners registering each year have greatly exceeded the usual pre-war figure of eleven hundred or so. The large additions to the profession in recent years brought the total number of names on the *Medical Register* up to 56,741 at the end of 1933. This is 8,600 more than the figure for 1923, nearly 15,000 more than that for 1913, and 19,000 more than that for 1903. The population of the British Isles has not increased to anything like that rate during the same decennial periods, and the ratio of doctors to inhabitants is therefore much higher now than ever before. Some think that the saturation point has been reached. We should say rather that at the moment the medical profession of this country is quite large enough, but not so much overstocked as ill-distributed. None the less, it is probably true of this country, as of America, that 'doctors are being trained without any consideration of possible consumer requirements and beyond the limit that society can adequately support.'"

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A NON-RESTING HORSE: DAMAGES FOR DEALER

The *North British Agriculturist* reports an action in Cupar Sheriff Court which centred round a horse which would not lie down, when a horse dealer sued for repayment of loss sustained through defender's breach of warranty.

The Sheriff stated that pursuer purchased from the defender a brown horse at the price of £40. Pursuer averred that he bought the horse upon the faith of an express verbal warranty that it was a good worker, sound in wind, and a regular rester. When the horse was delivered he found that it would not lie down at night, and therefore failed to conform to the warranty as to resting. Defender denied that he gave any warranty, and averred that he only said that the horse had always rested when with him. There was the usual conflict of evidence as to what passed during the negotiations, said the Sheriff, but he saw no reason to think that the pursuer's witnesses were untruthful. If their evidence was accepted it was sufficient to prove that a definite warranty was given.

Pursuer was a horse dealer by trade, and might be presumed to understand it, and it seemed unlikely he would have agreed to give such a price unless he had a definite assurance that the animal was free from faults. Defender spent a night in pursuer's stable, and it was admitted that the horse did not rest.

The Sheriff said his conclusion was that the horse was not a good rester, and he granted decree for £19 15s., remarking on the fact that the horse was re-sold by pursuer, who got £30 for it.

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RICHMOND ROYAL HORSE SHOW

The directors of the Richmond Royal Horse Show have fixed June 13th, 14th and 15th for the show to be held next year. The new chairman will be Mr. W. J. Hatton, one of the oldest members of the society and its oldest director. He has been associated with the show since its earliest days.

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

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THE OPERATION FOR ROARING

To the Editor of The Veterinary Record

Sir,—I would be very grateful if you would kindly allow me to correct an error on page 1,159 of your journal of the 22nd instant. What I said at the meeting of the Midland Counties V.M.A., held at Stratford-on-Avon, was that "in cutting through the thyro-cricoid ligament of a horse before stripping the mucous membrane from the left ventricle, one found that the ligament was very much thickened compared to that of a non-roarer, as I had cut through the ligament of several horses which were not roarers and the ligament was quite thin."

Whilst on the subject of the roaring operation as introduced into this country, over twenty years ago, by Mr. W. L. Williams, it might interest some of your readers to know that I had the pleasure of meeting Mr. Williams last month, at the International Veterinary Conference in New York. I reminded him that it was twenty years, almost to the day, since we had last met in Knightsbridge Barracks, when he stripped the ventricles of two horses in the 1st Life Guards which were bad roarers. (I well remember that Mr. Williams did the operation most neatly under a local anæsthetic, with the horses *standing*.) Mr. Williams told me that he had to give up operating some years ago. He read a most carefully prepared paper on diseases of young animals, a subject in which he is very interested, as he is now Professor of Obstetrics at the Cornell Veterinary College.

Yours faithfully,

Graham Rees-Mogg.

42, Princes Gate,
S.W.7.
September 23rd, 1934.

HOSPITAL SERVICE FOR ANIMALS

To the Editor of The Veterinary Record

Sir,—I should be indebted to you for permission to appeal to readers of *The Veterinary Record* who have experience of hospital service for animals in Great Britain and Ireland.

I received a request from a Swedish veterinarian, who is compiling a book on "Hospital Services for Animals" to send him details of the facilities existing in this country. Through the kindness of the authorities concerned I hope to receive details of the hospitals under control of the respective Veterinary Colleges, the R.S.P.C.A., and one or two homes of retirement for worn-out horses, together with Military Hospitals.

I feel that there may be several private committees or individuals carrying on work of this nature under qualified veterinary supervision and I should be extremely obliged to any readers for information on this point, mentioning, if possible, how the funds are raised and if free treatment is afforded to animal owners who are not in a position to pay a fee.

Yours faithfully,

Geoffrey B. Brook.
Veterinary Education Officer.

County Council Agricultural Institute,
St. Mary's Gate,
Derby.
September 20th, 1934.

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The Editor acknowledges, with thanks, the receipt of the following:—

Reports of meetings of the following Divisions, N.V.M.A., from their respective Hon. Secretaries: Mid-West, Society of Veterinary Practitioners, Western Counties, and Yorkshire.

Communications from Messrs. E. P. Barrett (Margate), F. T. Harvey (St. Columb), J. Kernohan (Ballymena), Major-General Sir John Moore (London), Major W. S. Lornie (Perth), Mr. B. Oswald (Vrosevac, Yugoslavia), Dr. R. H. Schneider (Boston, Mass.), Captain J. Smith (Kenley) and Captain A. R. Smythe (Falmouth).

Diseases of Animals Acts.

SUMMARY OF RETURNS

Period.	Anthrax.		Foot-and-Mouth Disease.		Parasitic§ Mange.		Sheep Scab.	Swine Fever.	
	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Animals slaughtered as diseased or exposed to infection.	Outbreaks reported by the Local Authorities.	Animals attacked.	Outbreaks confirmed.	Outbreaks confirmed.	Swine slaughtered.
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Period 1st to 15th Sept., 1934	10	11	2	130	3	5	25	61	39
Corresponding period in									
1933	10	12	3	74	3	3	35	33	23
1932	2	2	3	300	2	2	3	43	18
1931	15	17	4	397	8	37	4	70	30
Total 1st January to 15th September, 1934	274	312	7	584	101	165	433	1,140	710
Corresponding period in									
1933	202	230	65	6,123	112	188	275	1,049	642
1932	253	311	9	862	101	161	167	1,250	616
1931	353	397	94	10,307	114	210	211	1,384	581

Note.—The figures for the current year are approximate only.

§ Excluding outbreaks in Army Horses.